FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

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Flight.

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EDITORIAL COMMENT.

"Anti-Bomb" Insurance. A New Business for Underwriters.

If anyone had attempted ten years ago to predict that in this year of grace, 1914, we should be recording the fact of insurance policies being taken out in respect of possible damage to property as a result of a feared raid on this country by hostile aircraft, he would have been regarded as an idle dreamer, if, indeed, not something worse. Yet the fact that Paris, Ostend, and other places have been accorded aerial visits by the enemy, who has dropped a few bombs, would appear to have given rise in certain quarters of the Metropolis, as well as in some parts of the country, to such a nervous feeling that, for some little time now, a new class of insurance business has been developed by Lloyd's underwriters, who are stated to have issued during the past few weeks a considerable number of policies representing large sums of money.

It is announced, for example, that many of the most prominent buildings in the City have been covered, together with every class of structure in the West End. The premium varies considerably, rates ranging from 1s. 6d. to 5s. per cent. per annum being quoted, underwriters being inclined to argue that certain buildings are exposed to greater danger than others. According to *The Times*, while the rates for London itself remained unchanged, the rate on wharves and adjoining premises on the Thames rose from 5s. per cent. on Tuesday to, in many cases, 10s. per cent., though a fair amount of business was done at 7s. 6d. This, of course, is entirely a matter of speculation which events must be left to determine, there being no data of any kind upon which to base a reliable opinion, although of course it is self-evident that Zeppelins are hardly likely to be despatched to London, with all the contingent risks, for the purpose of dropping explosives on any but the most populous and important centres. In one respect, the business very much resembles that of specie insurance—namely, that a single serious claim will more than wipe out the whole of the premiums likely to be received over a very long period. Thus, taking a premium of 2s. per cent., this means that in order to counterbalance the payment of a single claim of £100, underwriters would require to receive a minimum of 1,000 premiums of 2s. each, which fact, we think, is silent evidence of the *material* risk to be feared as against the moral effect which it is sought by the Germans to inculcate on the British public. As the *Financial Times* points out, underwriters are, in reality, laying long odds against a successful air raid on the buildings they are insuring. Thus, it may be taken that even in insurance circles the probability of this country being invaded by a fleet of Zeppelins or other aircraft is regarded as being extremely remote. Indeed, a well-informed writer in *The Times* considers that the underwriters who are writing aircraft risks have to thank the German Government for a great deal in giving rise to the rumours of intended invasion, and our own authorities for the orders they have issued with the object of guarding against the same. It should be matter for serious consideration whether the Government should not be called upon to take upon themselves full responsibility for any damage done by the means of aircraft, as under present conditions this should be surely a national risk, rather than that of private individuals.

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Our Flying Men Ready for the Zeppelins.

Although, of course, it is not outside the bounds of possibilities that our enemies will foolishly make an endeavour to visit this country by means of one or more Zeppelin airships, we consider that many of the public are unduly working themselves up into a

state of fear. The Police Order reducing street and shop lighting in the Metropolis to a minimum, coupled with the vague rumours of a prospective attack that have been given currency in the daily press, have perhaps not unnaturally tended to work on the feelings of some of the more nervous. As a matter of fact, the precautions instituted by the authorities need give rise to no alarm, any more than need the notice issued on Monday by the Mayor of Gravesend warning the public that in the event of hostile aircraft coming in the neighbourhood of the Thames and Medway defences they should, for safety's sake, take shelter in the lower rooms or cellars of their houses.

All such measures as these may be regarded as preparations for possibilities rather than for probabilities, and it is safe to say that those who have been scared thereby would have been among the first to cry out against those in charge of our national safety had a hostile airship or aeroplane been allowed to take us by surprise.

As Mr. Walter Runciman usefully pointed out at a public meeting on Saturday last, even if we are favoured with visits from Zeppelins they will not have it their own way entirely. "We have courageous men in the Flying Corps who have already paid their respects to the airship sheds of Düsseldorf, and they have pledged themselves to a more courageous feat if the Zeppelins come."

While it is true that a large number of our flying officers are already at the front doing magnificent work, as has been testified in the despatches of both General Joffre and General French, there is still an ample reserve of expert pilots at home to cope with any emergency, so that those who have been suffering from an attack of "nerves" may be reassured. Even if a Zeppelin does venture across the Channel it will have a warm reception; not only so, but out of the evil it may do good will come, for an airship raid into this country would undoubtedly give an impetus to recruiting even greater than that which has followed the entry of the Germans into Antwerp.

Winter Comforts for Our Air Services.

Even "the man in the street" realises and appreciates the excellent work the members of the Naval and Military Air Services have already done in connection with the war, and hence we are certain that the appeals for gifts of comforts, &c., for the flying services, which we publish this week from Lady Henderson, wife of the General Officer Commanding the Royal Flying Corps with the Expeditionary Force, and from Mrs. Murray Sueter, wife of the Director of the Air Department of the Admiralty, will meet with a hearty and ready response.

It is well known that in order that a man may put forth his best work it is essential that he should be kept comfortable, and therefore no effort must be spared to ensure that the gallant men, who are striving their hardest to keep for this country the supremacy of the air, are enabled to keep at "top hole" efficiency. It needs no stretch of imagination to realise that being "on active service" is a far different thing to the friendly contests which take place at Hendon and Brooklands on a bright sunny day. Not only does the actual work of air scouting have to go on, whether the weather be fair or foul, but the machines have to be repaired and kept in tune without the shelter and convenience of the workshops which are available in peace time. In spite of all these drawbacks, however, both officers and men of both branches of the air services are doing grand work, and although they are not complaining, it is only natural that those at home, able to enjoy the comforts of a warm fireside, should do all in their power to reduce to a minimum the rigours to which they whose duties sometimes keep them in the air for hours at a stretch are exposed.

We understand that among the articles most in request are warm caps, gloves, mittens, socks, knitted jackets, pipes, tobacco, cigarettes and even matches, while those who prefer it may send along their little gift in cash, confident in the knowledge that it will be expended wisely and well. Gifts may be sent to Lady Henderson or Mrs. Murray Sueter, the method of despatch, &c., being given in this issue on p. 1042.

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THE WRIGHT PATENT AND THE BRITISH GOVERNMENT.

OUR readers will be glad to hear that the Government have settled terms with the British Wright Co. by paying a lump sum of £15,000 for past, present and future use of the original aeroplane patent taken out by Orville and Wilbur Wright. Quite apart from the natural satisfaction we must all feel for this official recognition of the services rendered to aviation by the Wright Brothers, English manufacturers must feel a sense of relief to know that all the machines they have made in the past or may in future make for their principal customers—the Army and the Navy—are now removed from the possibility of forming the subject of litigation in respect to infringement of the pioneer patent. The action by the British Wright Co. against Mr. Mervyn O'Gorman, the nominee of the War Office, has been proceeding quietly for more than a year past, following several months of earlier discussion, and we understand that the offer to accept £15,000, in settlement of the original claim of £25,000, was made by the British Wright Co. in order to relieve the Government from an unnecessary embarrassment during the stress of war.

Both sides are to be congratulated on their good sense in coming to this settlement.

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A Warning.

THE following notice as to the precautions to be taken by the public should hostile aeroplanes appear was issued at Gravesend at the beginning of the week:—

"Notice from the General Officer Commanding Thames and Medway Defences.

"The public are warned that, in the event of hostile aircraft coming into the neighbourhood of these defences, there will be a certain amount of danger to residents in the district from falling pieces of projectiles, from projectiles themselves, or from bombs dropped from aircraft. Consequently, if firing is heard, people should at once take shelter. The safest places will be in the lower rooms or cellars of buildings. Any persons seeking to gratify their curiosity will do so at their own risk. It will not be possible to issue any warning, and the only notice will be the firing of guns.

"A. E. ENFIELD, Mayor."

The Lights of London.

IN connection with the regulations made by the Home Office and the police regarding the amount of lighting permissible, a further notice was issued last week ordering that all external lighting not needed to secure the safety of traffic should be discontinued, as well as interior lighting of great intensity which illuminates the roadway.

AIRCRAFT WORK AT THE FRONT.

THE following extracts, containing references to aircraft work, are taken from the report of an eyewitness present with the British General Headquarters in France, and issued by the Press Bureau on October 9th :—

"Wednesday, September 30th . . . . One of our airmen succeeded in dropping nine bombs, some of which fell on the enemy's rolling stock collected on the railway near Laon . . . .

"Thursday, October 1st . . . . A French aviator dropped one bomb on a railway station and three bombs on troops massed near it . . . .

"Up to September 21st the air mileage made by our airmen since the beginning of the war amounted to 87,000 miles, an average of 2,000 miles per day, the total equalling nearly four times the circuit of the world. The total time spent in the air was 1,400 hours."

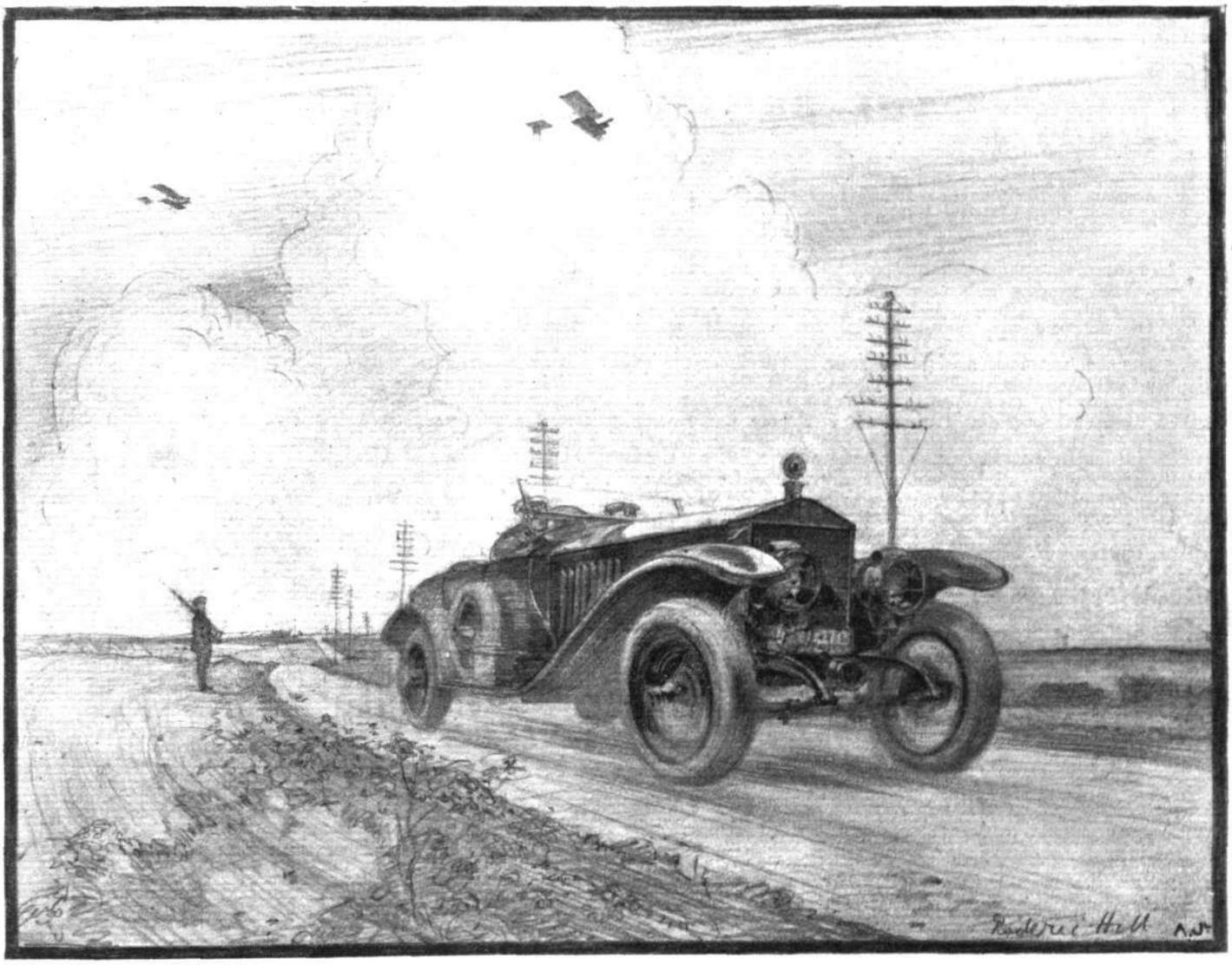
The following extracts are from the continuation of "Eyewitness's" despatch issued by the Press Bureau on Saturday :—

"The comparative calm on our front has continued. Though fine and considerably warmer, the last six days have been slightly misty, with clouds hanging low, so that the conditions have not been very favourable for aerial reconnaissance. In regard to the latter, it is astonishing how quickly the habit is acquired—even by those who are not aviators—of thinking of the weather in terms of its suitability for flying . . . .

"On Monday, the 5th, there were three separate duels in the air between French and German aviators, one of which was visible from our trenches. Two of the struggles were, so far as could be seen, indecisive, but in the third the French airmen were victorious and brought down their opponents, both of whom were killed by machine-gun fire. The observer was so burnt as to be unrecognisable. . . . .

". . . . On that evening our airmen had an unusual amount of attention paid to them, both by the German aviators and their artillery of every description. . . . .

". . . . Both for the location of targets and the communication of the effect of fire, reliance is placed on observation from aeroplanes and balloons, and on information supplied by special observers and secret agents who are sent out ahead or left behind in the enemy's lines



THE WAR: THE MOTOR ON LAND AND IN THE AIR.—A scene actually witnessed by the artist on the road between Brighton and Newhaven. Two Naval officers in a Rolls-Royce car passing a sentry, while two military biplanes, flying round the coast, are seen overhead. From an original drawing by Roderic Hill.

to communicate by telephone or signal. These observers have been found in haystacks, barns, and other buildings well in advance of the German lines.

"Balloons of the so-called 'Sausage' pattern remain up in the air for long periods for the purpose of discovering targets; and until our aviators made their influence felt by chasing all hostile aeroplanes on sight the latter were continually hovering over our troops in order to 'register' their positions and to note where headquarters, reserves, gun teams, &c., were located. If a suitable target is discovered the airman drops a smoke ball directly over it or lets fall some strips of tinsel which glitter in the sun as they slowly descend to earth. The range to the target is apparently ascertained by those near the guns by means of a large telemeter, or other range-finder, which is kept trained on the aeroplane, so that when the signal is made the distance to the target vertically below is at once obtained. A few rounds are then fired, and the result signalled back by the aviator according to some pre-arranged code."

The following comments were included in the account of an eyewitness at the front issued by the Press Bureau on the 11th inst.:—

"In spite of the perfection of their arrangements for ranging and observation, there has been much waste of ammunition by Germans. For instance, within an area of two acres on our side of the Aisne there were over 100 craters made by their heavy high-explosive shell. This shower of projectile, which must have cost some £1,000, did absolutely no damage, for the locality never happened to be occupied whilst it was being bombarded. It also incidentally illustrates one weak point of indirect fire when unaccompanied by observation."

The Secretary of the Admiralty, through the Press Bureau, made the following announcement on the 9th:—

"Squadron Commander D. A. Spenser Grey, R.N., reports that as authorised he carried out, with Lieut. R. L. G. Marix and Lieut. S. V. Sippe, a successful attack on the Düsseldorf airship shed.

"Lieut. Marix's bombs, dropped from 500 ft., hit the shed, went through the roof, and destroyed a Zeppelin. Flames were observed 500 ft. high, the result of igniting the gas of an airship. All three officers are safe, but their aeroplanes have been lost. The feat would appear to be in every respect remarkable, having regard to the distance—over a hundred miles—penetrated into country held by the enemy, and to the fact that a previous attack had put the enemy on their guard and enabled them to mount anti-aircraft guns."

In the *communique* from the Admiralty regarding the work of the Marines at Antwerp, there was the following:

"The naval aviation park having completed the attack on Düsseldorf and Cologne, already reported, has returned safely to the base protected by its armoured cars."

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THE BRITISH AIR SERVICES.

Royal Naval Air Service.

THE following was announced in the *London Gazette* of the 9th inst.:—

Assistant Paymaster John Henry Lidderdale to be Flight Lieutenant. Dated July 1st, 1914.

The following was announced by the Admiralty on the 9th inst.:—

Mr. R. Purves has been granted a temporary commission as Sub-Lieutenant, R.N.V.R., and appointed to the "Pembroke III," additional, for duty with the Royal Naval Air Service, to date October 6th.

The following were announced by the Admiralty on the 12th inst.:—

The undermentioned have been entered as Probationary Flight Sub-Lieutenants, and appointed as follows: E. H. Dunning, to the "Pembroke III," for a course of instruction at Eastchurch Naval Air Station; October 4th. T. K. Young, E. F. Bray, E. J. Hodsoll, and E. B. Morgan, to the "Pembroke III," for a course of instruction at the Hendon Air Station; October 7th. K. F. Watson, to the "Pembroke III," for a course of instruction at Hendon Aerodrome, and D. M. Barnes (for temporary service), to the "Pembroke III," for instruction at Hendon Aerodrome; both to date October 12th.

The following appointment was announced by the Admiralty on the 13th inst.:—

Lieut. R. G. M. Pink, to "President," additional, for special service in Air Department at Admiralty. October 12th.

Royal Flying Corps (Military Wing).

THE following was announced in a supplement to the *London Gazette* issued on the 7th inst.:—

Capt. Lionel E. O. Charlton, D.S.O., the Lancashire Fusiliers, a Flight Commander, to be advanced to Squadron Commander, and to be temporary Major. Dated September 16th, 1914.

The following was announced in the *London Gazette* of the 9th inst.:—

Lieut. C. W. Wilson, Special Reserve, from a Flying Officer, to be a Flight Commander, and to be temporary Captain. Dated September 16th, 1914.

The following was announced in a supplement to the *London Gazette* issued on the 10th inst.:—

The undermentioned to be Second Lieutenants (on probation): James Gordon McKinley. Dated October 5th, 1914. Dated October 10th, 1914: Gerald Charles Ross Mumby and Oswald Mansell-Moullin.

The following was announced in a supplement to the *London Gazette* issued on the 12th inst.:—

Lieut. Ronald L. Charteris, Special Reserve, to be a Flying Officer. August 6th, 1914.

The following was announced in the *London Gazette* of the 13th inst.:—

Special Reserve of Officers.—Second Lieut. (on probation) William C. Adamson is confirmed in his rank.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

Aviators' Certificates.

THE following Aviators' Certificates have been granted:—

925 Flight Sub-Lieut. Philip Charles Vere Perry, R.N.A.S. (Grahame-White Biplane, Grahame-White School, Hendon). Oct. 5th, 1914.

926 Thomas Walker Abbott (Caudron Biplane, British Caudron School, Hendon). Oct. 7th, 1914.

927 Peter Legh (Caudron Biplane, British Caudron School, Hendon). Oct. 8th, 1914.

928 Malcolm McBean Bell-Irving (Maurice Farman Biplane, Military School, Brooklands). Oct. 9th, 1914.

929 George Crosfield Norris Nicholson (Maurice Farman Biplane, Military School, Brooklands). Oct. 9th, 1914.

930 Donald Campbell MacLachlan (Wright Biplane, Beatty School, Hendon). Oct. 9th, 1914.

931 Beaufoi John Moore (Maurice Farman Biplane, Military School, Brooklands). Oct. 10th, 1914.

Royal Aero Club Burgee.

Burgees, embodying the design recently approved by His Majesty the King, namely the Royal Crown with the Caduceus, can now be obtained by Members from the Royal Aero Club, price 6s. each.

B. STEVENSON, Assistant Secretary.

166, Piccadilly, W.

THE BOLAND AIRCRAFT AND JIB CONTROL.

As far back as 1907—when the question of the Wright patents for aeroplane control was not such an important matter in America as it is to-day—the late Frank E. Boland started experimenting with his system of control. In 1908 he made some successful public flights on a canard-type biplane embodying his system of control. The latter was not only entirely original in form, but possessed undoubted properties as regards automatic stability. With this system of control wing-warping *ailerons* and vertical rudders of the orthodox type are dispensed with, and in their place are two "jibs" mounted one at each extremity of the main planes. These jibs serve to control conjointly both the lateral balance of the machine and its direction in a horizontal plane, the direction up and down being governed in the usual way by means of an elevator. In this way the control has been brought down to the simplest form possible—almost as simple as that of a motor car—for only two movements are necessary, the rotating of a wheel for steering to right or left, and a fore and aft movement of the vertical column carrying the wheel for longitudinal control. The jibs, which are somewhat pear-shaped, are mounted at the extremities of the main planes as shown in Fig. 1. They are pivoted about an oblique axis extending from the lower end of the front strut to a point about one-third from the top of the rear strut at an angle of 45° to the horizontal. The axis passes through the jib from the lower foremost corner close to the leading or forward edge, so that there is considerably more surface below and at the rear of the axis than there is above and forward of the same. Normally each jib is in a vertical plane, forming a side curtain at each end of the planes—(a), Fig. 1—but on the rear edge of either of the jibs being pulled inwards—(b) and (c) Fig. 1—the jib so moved presents a surface—in the direction of flight—inclining upwards both fore and aft, and outwards. This is equivalent to a surface having a negative angle of incidence, and produces a downward pressure, as well as a drag, on that side of the aeroplane at which the jib is pulled in. To make a turn, therefore, the jib on the side it is desired to turn is pulled in, with the result that a drag is caused on that side as well as a depression causing the machine to bank over the correct amount in turning.

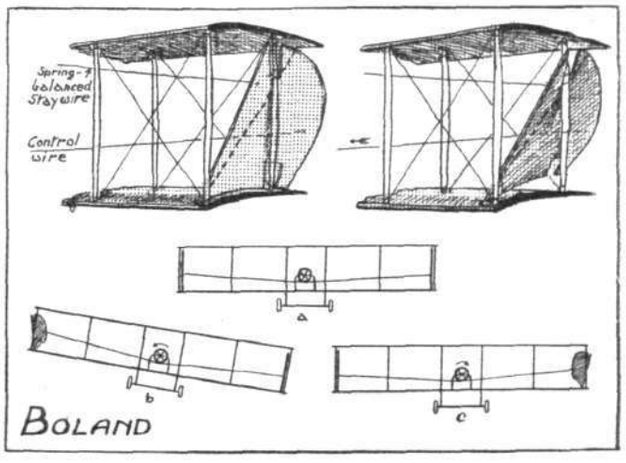

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Fig. 1.—Details of the Boland Jib Control. Top: Two views of one of the jibs, on the left in normal position, and on the right pulled in. Bottom: (*a*) machine in normal flight; (*b*) correcting a bank; (*c*) starting a left-hand turn.

When the turn is complete the other jib is pulled in for an instant and the machine strightens out. Side-slipping on a turn is, it is claimed, impossible, as the jibs are so arranged and proportioned that they automatically provide the correct amount of bank at all times. To a large extent lateral balance is maintained by the jibs when in their normal position—as in the early Voisin machines with side curtains—but should the machine bank over owing to being caught by a side gust, &c., the jib on the high side is pulled in immediately the bank is felt, when the machine will be brought to an even keel without deviating from a straight course; if this bank is not corrected, however, the machine will merely make a turn corresponding to the amount of bank. The jibs, which move inwards and one at a time only, are connected to a control wheel by cables attached to the former near the trailing edge, whilst a spring loaded cable is attached to the leading edge of each jib and to some convenient part of the machine for the purpose of bringing the jib back into the normal position after being released.

The Boland "Tailless" Biplane.

This system of control has been tried on several types of machines. The first was a canard-type biplane, but as the model turned out in 1913 differed only in detail improvements we will confine our remarks to the latter type, which is illustrated by Fig. 2. It will be seen that it follows somewhat the general arrangement of the English "Valkyrie" monoplanes. The main planes are double-surfaced and built up in three sections. The centre section includes the chassis, *nacelle*, and engine, and so forms the main unit to which the outer sections, each measuring 15 ft., are attached. The latter are built up on two main spars, the front one of which forms the leading edge, whilst the rear spar is spaced a distance of two-thirds the chord from the front one, so that there is a large amount of flexible trailing edge. The ribs are of the Wright type, consisting of top and bottom spruce battens, with solid spruce blocks in between. Top and bottom planes are separated by eight pairs of spruce struts, the balancing jibs being mounted on the two outer pairs. Mounted on the lower plane of the centre section is a coracle-like *nacelle*, the front portion, containing the pilot's and passenger's seats, extending well forward of the planes, whilst the rear portion carries the power plant, the propeller being situated midway between the top and bottom planes just behind the rear spars. Unlike the "Valkyrie" monoplane, there is no fixed stabilising plane in front, but a large pivoted elevator measuring 12 ft. span by 3 ft. 6 ins. chord, carried by four outriggers some 13 ft. forward of the main plains. In flight the elevator is held presenting a lifting angle, so that it supports a certain amount of load. It is double-surfaced, having a pronounced camber, and is connected by cables to a Derperdussin type rocking yoke, which also carries the wheel operating the jibs. The round-nosed extensions of the outriggers can be detached from the latter, and with them the elevator, whilst the outriggers themselves are detached in two units, each consisting of an upper and lower *longeron*. The latter form continuations of the chassis skids, being connected to the top ones by vertical struts. A steel axle carrying a pair of running wheels is mounted by means of rubber bands on the skids proper under the front, pilot's, seat. The engine, which is mounted in the rear of the *nacelle*, is a 60 h.p. 8-cyl. water-cooled Boland, weighing complete 240 lbs. The principal dimensions are as follows:—

Span, 35 ft. 6 ins.; chord, 5 ft. 6 ins.; gap, 5 ft. 6 ins.; supporting area of main planes, 373 sq. ft.; overall length, 21 ft. 9 ins.; weight with fuel, 900 lbs.; speed 60 m.p.h. This machine has also been flown with success as a hydro-biplane, the wheels having been replaced by two long pontoon floats.

The Boland Monoplane Flying Boat (Fig. 3), which made its first appearance at the New York Aero and Motor Boat Show in February this year, possesses several distinct features in design in addition to the jib control. It, also, is of the canard type, having a single pivoted elevator right forward. The boat is of quite unusual design, being very long and narrow, viz.:—19 ft. 3 ins. and 2 ft. 10 ins. respectively. It is provided

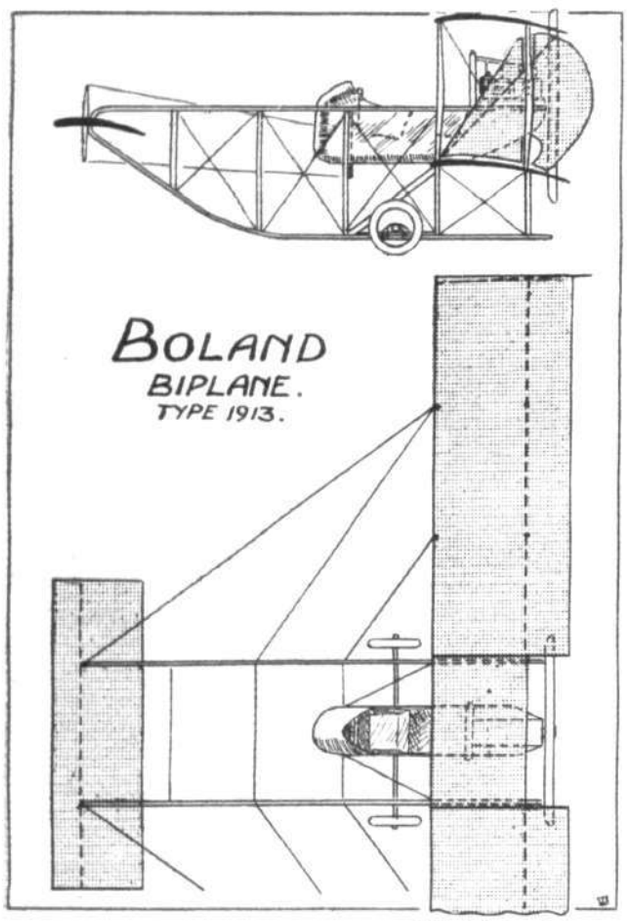

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Fig. 2.—Plan and side elevation of the 1913 type Boland "Tailless" biplane.

with two hydroplane steps spaced 6 ft. apart, and the bottom is flat except at the stern, which is concave. The hull, almost rectangular in section, is built up of mahogany ribs and stays covered with one-ply spruce and a layer of Irish linen doped with "Conover" and enamel varnish. Ash gunwales, 3 ins. deep, extend from stern to bows along the deck, and support at the forward extremities the elevator, which measures 9 ft. span by 3 ft. 6 ins. chord. The pilot's seat is situated in the hull amidships, and is protected by a scuttle dash; the passenger's seat is behind, immediately under the leading edge of the main planes and the horizontal centre of gravity. A small rudder is mounted under the stern to facilitate steering when taxying over the water.

The wings are in two sections, and are mounted some 3 ft. above the stern of the boat on either side of the engine bearers, which are supported on the gunwales by three pairs of struts. Each wing is built up on two main spars and double-surfaced, having a camber of $4\frac{1}{2}$ ins. tapering to $3\frac{3}{4}$ ins. and set at a dihedral angle of about $1\frac{1}{2}°$. The top wing bracing is by a central hollow mast of laminated oak and mahogany, fastened in the keel. This mast also carries sockets taking the roots of the front wing spars. Under bracing is by a girder understructure, extending from the boat outwards under the wings, the extremities carrying auxiliary floats and the balancing jibs. The latter are similar in shape to those on the previous machines, and function in exactly the same manner. The engine, a 70 h.p. Boland, is mounted between the wings behind the rear spars, and a portion of the trailing edge of the wings is cut away to receive the

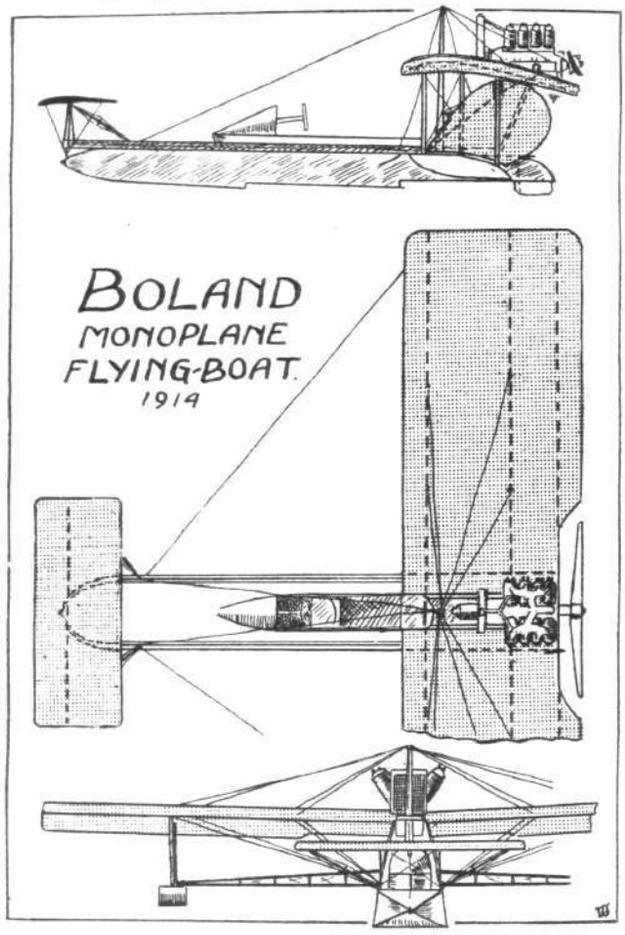

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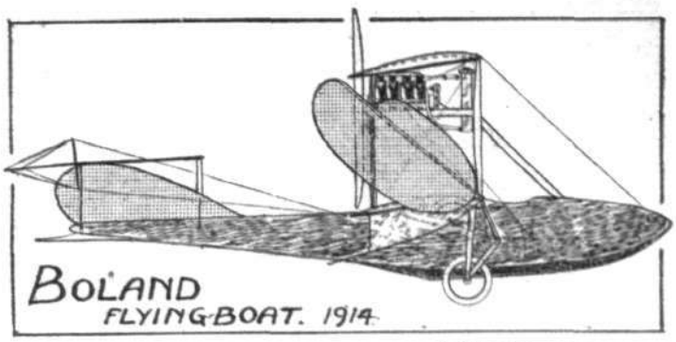
Fig. 3.—Plan, side and front elevation of the Boland monoplane flying boat.

propeller, which is 6 ft. 8 ins. diameter. The radiator is mounted in front of the engine, and the fuel tank is underneath. The principal dimensions, are as follows:—Span, 28 ft. 8 ins.; chord, 6 ft. 10 ins.; supporting area (main planes), 181 sq. ft.; overall length, 20 ft. 8 ins.; weight (complete machine), 900 lbs.

The New Boland Flying Boat is the latest development of the Boland system, and is the first product of the Aeromarine Plane and Motor Co. of Avondale, N.J., formed recently to manufacture machines under the Boland patents. As will be seen from Fig. 4, this machine follows more conventional lines, and differs mainly in that no vertical rudder, *ailerons* or wing warping are employed. The boat has a single step situated at a point under the centre of gravity, and

forward of the step the bottom is of V-form. The main framing consists of spruce longitudinals, $\frac{3}{4}$ ins. square, with steam bent ash ribs $\frac{5}{16} \times \frac{5}{8}$ ins., spaced from 4 to 6 ins. The hull consists of an inner skin of cedar laid spirally about the tail, and from backbone to backbone forward of the step, covered with sheeting laid in marine glue. Over this is an outer covering of cedar laid fore and aft. Four transverse bulkheads, consisting of two and three skins laid diagonally with interlayers of canvas, provide five water-tight compartments and also serve to stiffen the hull. Auxiliary floats are mounted under the lower plane extremities. An arrangement of disappearing wheels for land use is also fitted, consisting of two wheels mounted forward of the centre of gravity on either side of the hull, with castor action and shock-absorbers similar to the Blériot running gear. The wheels are raised out of the water into a stream-lined box, and lowered, from the pilot's seat, which is in the hull forward of the step and of the main planes. The latter are in three sections, an inner one 5 ft. 6 ins. span mounted on the boat, and two outer ones each 18 ft. 4 ins. span which are attached to the inner section. The control jibs, almost elliptical in shape, are pivoted at an angle of 45°, 22 ins. from the outer ends of the main planes. The planes are built up on two main spars of spruce, the front one forming the leading edge measuring $1\frac{1}{2}$ ins. by 2 ins., and the rear one 1 in. by 3 ins. The ribs are of laminated spruce ribs with top and bottom flanges, and the struts are also of laminated spruce. The tail consists of a fixed stabilising plane with an elevator hinged to the trailing edge mounted high up over the stern of the boat, to which it is attached by means of a framework connected to flush hoops entirely encircling the boat, thus avoiding any openings through the skin of the latter. Immediately under the tail plane is a vertical fin—no rudder being attached, steering being accomplished by means of the jibs. Steering when on the water is by side plate rudders at the step. The engine, an 8-cyl. V, water-cooled Boland, is mounted high up in the centre plane section, and drives direct an 8 ft. propeller situated at the rear of the planes. The principal dimensions are as follows :—Span, 42 ft. 2 ins. ; chord and gap, 5 ft. 6 ins. ; supporting area, 435 sq. ft. ; overall length, 26 ft. 6 ins. ; weight with full load, 2,000 lbs.



"Flight" Copyright.

Fig. 4.—Side elevation of the new Boland biplane flying boat.

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A VISIT TO THE INTEGRAL AIR SCREW WORKS.

SINCE our visit last year to the temporary works of the Integral Propeller Co., Ltd., at Kentish Town, where the first British-built Chauvière air screws were manufactured, the firm has settled down in more convenient and commodious premises at 16, Elthorne Road, Upper Holloway. These premises, in fact, are the works which were formerly occupied by the British Deperdussin Co. On calling there the other day we found them in a state of great activity, for air screws are in great demand at the present time, and the Integral Co. are exceptionally busy turning out Government orders. Being well lit and very roomy these works are particularly suitable for work of this kind. There are three main shops, each separated from the other by solidly-built glazed partitions. One

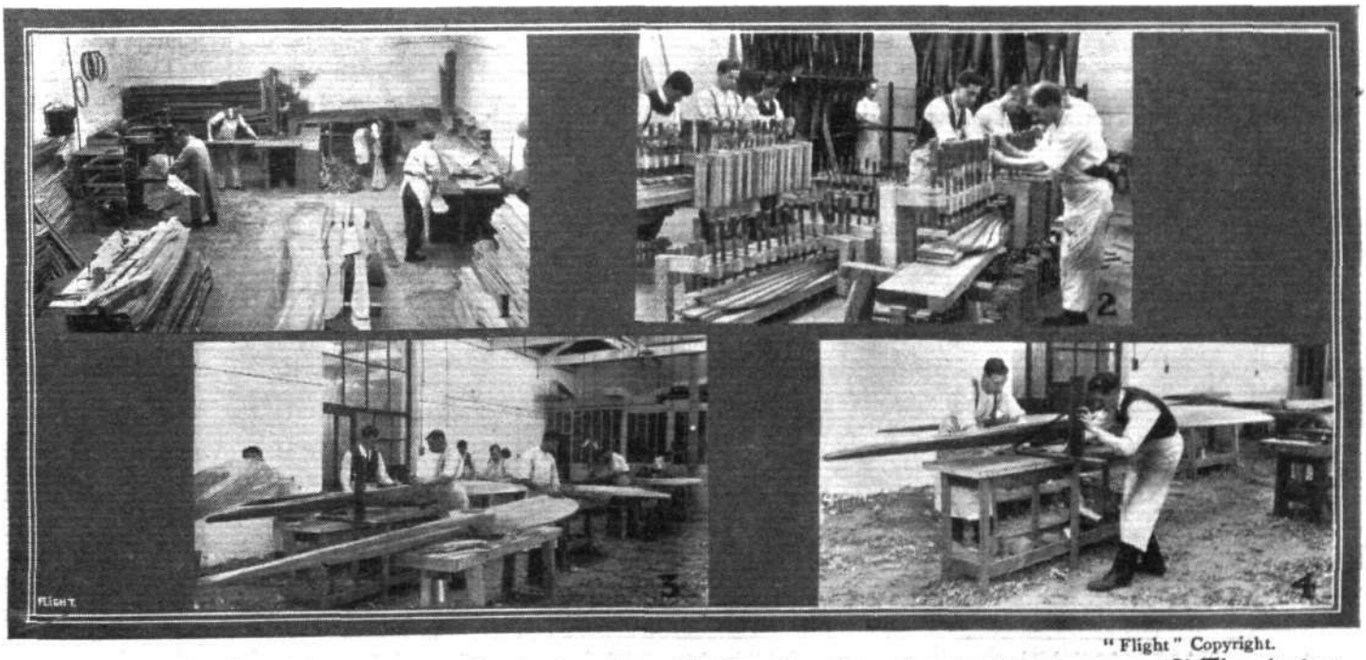

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Fig. 1.—(1) View of the saw benches in the shaping shop. (2) Clamping down the glued laminations. (3) The planing shop. (4) Gauge for measuring the pitch.

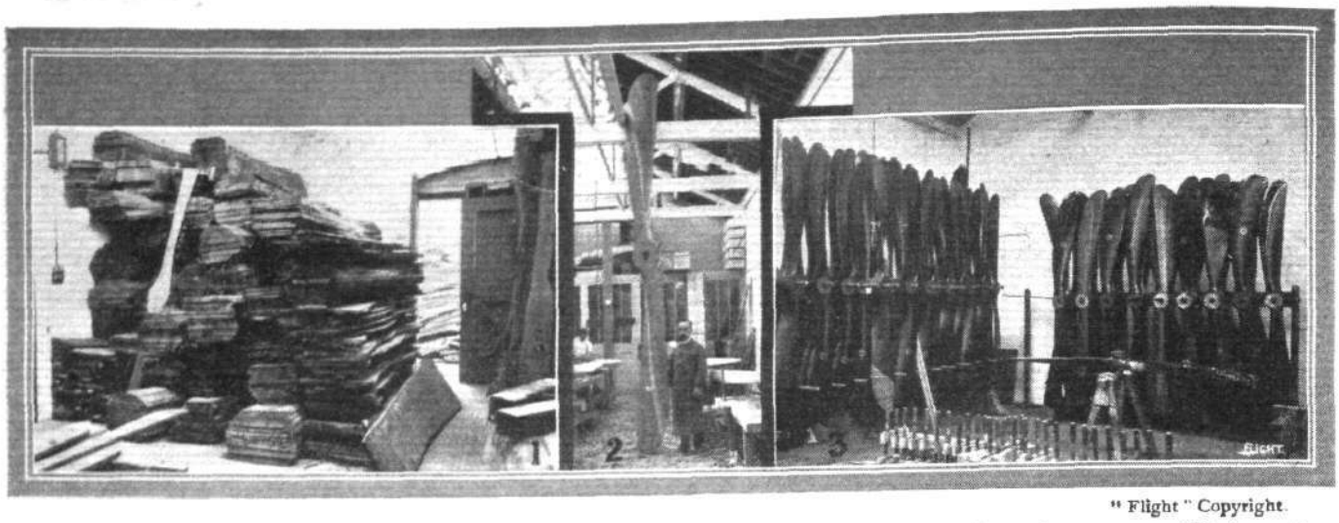

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Fig. 2.—(1) A stack of French walnut planks ready for cutting into shape. (2) A 16-ft. airship screw. (3) A stock of finished Integral screws.

section (Fig. 1) is devoted to shaping the wood—the best French walnut only is employed—and next to it is the glueing, varnishing and polishing shop, whilst adjoining this is the planing and truing shop, where the air screws are carved, by hand, to the correct shape, and tested as to balance by a device invented by M. Chauvière. As most of our readers are aware, the principal feature of the Chauvière integral air screw is in the shape of the blades, the leading edges of which are curved, whilst the trailing edges are straight. The ultimate effect of this is to allow a part of the air pressure to be brought behind the axis of the screw, that is, on the rear part of the blades, thereby avoiding deformation of the pitch. They are built up of about five layers of walnut, one overlapping the other fan-wise from boss to tip, thus forming the desired pitch. The layers are glued together with a special glue invented by M. Chauvière, and clamped under great pressure, as shown in one of the views in Fig. 1. When the glue has thoroughly set, the blades are planed to the correct shape by hand, the true curve being ensured by means of a series of templates, while the pitch at various points is measured by a gauge as shown in the last illustration in Fig. 1. After the screw has been carved to the correct shape and evenly balanced, it is varnished and polished. For waterplane work the tips of the blades are metal covered—a by no means easy job. In the centre of Fig. 2 will be seen one of four 16 ft. air screws built for one of our airships, some idea as to its great size being conveyed by the man standing beside it. Each of these screws weighs about 150 lbs. when finished, so they are, as our American cousins would say, "*some* wind-sticks."

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America Requiring Airships.

IT was stated by the *New York Tribune* last week that the United States Government have requested bids for two dirigibles, specifications of which are being submitted to builders. It is understood that these will be the first of many.

It may be recalled that the American Government experimented with a small Baldwin dirigible (20,000 cubic feet capacity), which was purchased in 1908.

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American Fatalities.

IT is reported from America that while Charles A. Hibbard was testing an old Curtiss-type biplane at Bardstown, Ky., on Sept. 4th, he met with an accident and sustained injuries which terminated fatally.

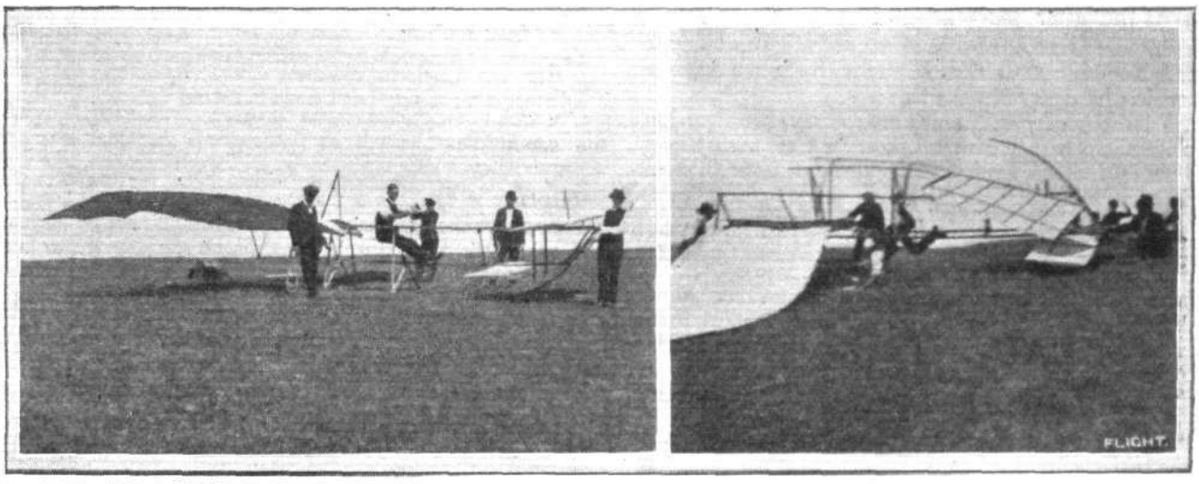
A message from Pueblo, Colo., states that while Weldon B. Cooke was giving an exhibition flight there in the State Fair Grounds on September 16th, his biplane was apparently overbanked and side-slipped to the ground.

MR. L. HALL MAKING A TRIAL FLIGHT IN HIS NEW SCHOOL MACHINE.—In the background may be noted some of the tents of the R.N.R., and the big hangar which the Grahame-White Aviation Co. have put up.

FLIGHT

EDDIES.

The two photographs on this page come from a reader in Dunedin, New Zealand, Mr. Oscar A. Wood, who, together with some fellow members of the Dunedin Aero Club, has been carrying out some interesting and—judging from the second photograph—exciting experiments with a home-made glider. Unfortunately he does not give us any details about the latter, which appears to have some original points in design, as can be seen from the first view, "before the smash." The gliding experiments were carried out in a high wind on a very bad ground, with the result shown. Fortunately Mr. Wood got off scratchless. They have also constructed a power machine, which is on somewhat original lines. It is a tractor monoplane, having a very deep triangular-section *fuselage*, the lower *longeron* of which terminates at its forward end in a turned-up skid protecting the tractor screw. The wings are braced with a series of king-posts, and are double surfaced; they also have a pronounced camber. The tail, consisting of stabilising plane, elevator, and balanced rudder, is mounted on the rear extremity of the *fuselage*. I hope to be able to give a fuller description of this 'bus on another occasion, as at present I only have a single photograph before me, and hope to hear again from Mr. Wood. In the meantime he has our best wishes for success in his experiments.



TRYING OUT THE MAN-CARRYING GLIDER OF THE DUNEDIN AERO CLUB.—On the left, the start; on the right, the finish.

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"Wonderful Hendon!" the posters on the corrugated iron fence along the footpath from the old church proclaim in letters now almost illegible from driving rain and bleaching sunlight. The once brilliant colours of the bills have paled and are faint, like memories of bygone days, but they serve to recall the time when Hendon was the scene of, if not greater at least more spectacular, activity than at present, and when people flocked to the enclosures in their thousands to see the always well-arranged and cleverly carried out exhibitions of the aviator's art. How different is the aspect of Hendon now! Not that I would have it otherwise. The old times with their races and exhibitions of looping and other "scientific" demonstrations served admirably to create the general interest in aviation which led the man in the street on to an appreciation of the uses and possibilities of aircraft, and opened his eyes to the necessity of this country taking measures against being outdistanced in the race for aerial supremacy. Without that realisation the aerial equipment of this country would undoubtedly not have been what it is, since the clamouring for Government support begins to carry weight only when it is backed by public opinion. The pioneer work done by the proprietors of the Hendon Aerodrome in the past is, in another form, still going on to-day. If less spectacular, it carries with it conviction of the more immediately useful results which are being attained, results of vital importance to Britain as a nation. The amount of school work going on there now is a thing to be marvelled at. It is not until a visit is paid to the aerodrome on a reasonably calm day that the activity of the place is realised. On Saturday last there were at one time ten machines in the air, the greater number of which were school machines, and the serious way in which the pupils tackle their task shows in a way that nothing else could the spirit of eagerness to fit themselves as rapidly as possible for the services which their country demands of them.

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In watching this tuition work one cannot help noticing how great a percentage of the machines in use are either Caudron biplanes or else machines of the Caudron type. The reason for this is not difficult to guess, since the long skids which pull the machine up quickly on alighting, the wide wheel track rendering it very steady on the ground, and the flexible trailing edge of the wings that gives it an equally good lateral stability in the air are all features making this type particularly suitable for school work. Its lightness also is a point in its favour, since an engine of moderate horse-power can be employed. In France great numbers of Caudrons are used by military aviators, and the British Admiralty also possesses several of these excellent machines.

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One of the latest machines of the Caudron type to be turned out was tried last week by Mr. L. Hall, at whose works it has been built. This Anzani-engined machine leaves the ground after a very short run, and appears to possess remarkable climbing powers for a machine of only 35 h.p. It will be used as a *brevet* machine at the Hall school after the pupils have familiarised themselves

with the handling of the older biplane of the same type which has now been in use at the school for some time.

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The list of flying schools already established at Hendon has received a new addition in that opened recently by Mr. E. Prosser, who has done a great amount of flying in various parts of the country, and who has lately been acting as instructor at the Caudron school, where he has put several pupils through their paces with gratifying success. Mr. Prosser's 'bus is also of the Candron type, and is fitted with a 45 h.p. Anzani engine, which has run, Mr. Prosser informs me, without a hitch ever since he first installed it in his machine. One of the great advantages of this engine is that it can be throttled down to run very slowly. Later on it is intended to add another machine to the fleet.

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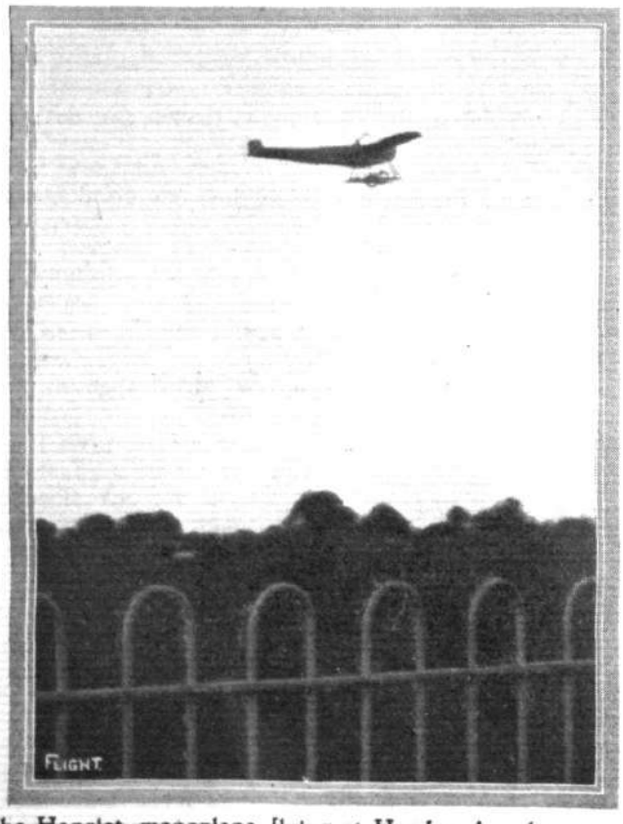
A further batch of news is to hand from Mr. Delfosse Badgery, the Australian agent for the G.A.C., dealing with his latest activities on his Australian-built Anzani-engined biplane, which was described in these pages recently. On August 12th last he made a cross-country flight from Moss Vale to Goulburn, a distance of 49 miles. At the latter place he later gave some very successful flights. The following is an extract from a letter sent by Mr. Badgery to the Delfosse Badgery Aviation Co., in which he describes his trip :—

"At 10 minutes to 7 a.m., I had the aeroplane in the straight near the house, and at 7 I gave the signal, and all hands let go. It was interesting for me, because the 'bus had her tanks brim-full. It made no difference to her marvellous lifting power, however, and two circuits of Mewbury was sufficient to give a mean altitude of 1,500 ft., which grew from there to Carrick, where I had attained 12,000 ft. to descend, as I was beginning to lose the use of my hands, owing to the intense cold.

"Not long after this the engine back-fired for some time, and the unfired gas discharging it into the exhaust pipe was fired by the other explosions entering, and this gave rise to a series of loud reports just like huge pistol shots.



The Hanriot monoplane flying at Hendon Aerodrome on a recent Saturday.

The Governor-General and the State Governor of New South Wales reading the official message from the Governor of Victoria just handed to them by M. Guillaux after his arrival at Sydney from Melbourne in July. Guillaux's actual flying time was 9 hrs. 15 mins., giving an average speed of about 64 m.p.h.

"I have heard since a small boy ran into one house and said that there was a 'haroplane lettin' off' crackers coming this way.

"My entrance to the town was at 8,000 ft.—rather sorry I was to lose that other 4,000—but I could not stand the cold.

"After leaving home behind, the smoke of the limited express was visible about at Kareela, so I steered for that part of the globe direct, where I afterwards picked up the railway line, like a pencil track in amongst a dense forest. It was then that I saw the smoke of the second express, emerging from the hills on to the plain near Carrick. The country was beautiful; Marulan was approaching me slowly on the left, and with the altimetre creeping round over the thousands a feeling of more security came over me, as I knew then that all the dangerous country was passed over.

"Goulburn itself was now very distinct; could see it well, and would have been able to tell it was a big town in a strange land, and yet I was 20 miles away.

"A huge *vol plané* concluded my flight."

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A very welcome visitor to Hendon last week was Mr. Frank Goodden, who arrived by way of what is undoubtedly his natural element—the air—and mounted on what is apparently his particular type of machine—a B.E.—for judging from the way he handled it he was never more at home in any of the various 'buses he has flown than he is in the product of the R.A.F. I learn that Goodden is very enthusiastic about his new mount.

I call to mind an occasion when Goodden treated me to a lecture, in his typical terse way, on the advantage of having a good set of instruments to guide the aviator, and I should imagine that in the B.E. he has found his ideal in this respect, for I notice that these machines are uncommonly well equipped with "gadgets" of various sorts.

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To the already considerable number of private schools that have been taken over by the authorities since the commencement of the war has now been added that of the Eastbourne Aviation Co., which has, Mr. Fowler informs me, been acquired by the Admiralty for the training of Probationary Flight Sub-Lieutenants. In consequence the Eastbourne Aviation Co. cannot, for the time being, undertake the tuition of private pupils. The location of this school renders it admirably suited for instruction purposes, since the ground is close to the sea, and pupils can therefore be taught both over-land and over-sea flying. Mr. Fowler's capabilities as an

instructor have been amply proved by the great number of civilian pilots he has seen through, and there is no doubt, therefore, that the new members of the Royal Naval Air Service will rapidly acquire proficiency under his guidance.

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There is little doubt that the "Lieut. Noel" who has been reported killed on service in France is not the Louis Noel who, by his fine flying at Hendon and elsewhere, has come to be looked upon as one of our own flyers. There are several pilots named Noel in the French service, hence the confusion, and if the name of the unfortunate pilot is Louis Noel, it is probably the one who took his "ticket" at the French Caudron school in October, 1911.

"ÆOLUS."

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FROM THE BRITISH FLYING GROUNDS.

Royal Aero Club Eastchurch Flying Grounds.

Naval Flying.—The Navy has been very busy last week, all available machines being up several times every day, the weather being perfect for flying. The machines at work were: Maurice Farman, Bristol tractor, Vickers gun 'bus, 1, 2, 62, 63, 66, 152 Shorts, Deperdussin.

Civilian Flying.—Mr. Alec Ogilvie was out several times on his 50 h.p. Wright. Mr. L. Jezzi was out on Saturday and Sunday on his Jezzi tractor 35 h.p. J.A.P.

Brighton-Shoreham Aerodrome.

Pashley Bros. and Hale School.—Instructors for last week:—E. C. Pashley, B. F. Hale and C. L. Pashley on Farman machines.

Up with instructor:—J. Morrison, Menelas Babiotis, and J. Sibley.

Circuits and eights:—C. Winchester and T. Cole.

London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—Monday last week, Sub-Lieuts. England and Hart and Mr. Stalker straights with Instructors Manton and Russell, Sub-Lieut. Giles and Mr. Easter solo straights. Mr. Morgan and Sub-Lieut. Riggall solo circuits. Sub-Lieut. Allen solo circuits and eights. Sub-Lieut. Perry going in for and passing *brevet* tests.

Tuesday, Mr. Carabajal solo straights. Pupils in hangars the rest of the day, it being too windy for flying.

Wednesday, Sub-Lieuts. England, Ffield, Groves, Hart, and Messrs. Y. Y. Liu, Stalker and Easter straights with Instructors Russell, Manton and Shepherd. Messrs. Carabajal and Easter and Sub-Lieut. Giles solo straights. Sub-Lieut. Allen first and second part of *brevet* tests. Mr. Morgan and Sub-Lieut. Riggall solo circuits, eights, &c.

Thursday, Sub-Lieuts. Ffield, England, Groves and Hart and Messrs. Y. Y. Liu and Stalker straights with Instructors Manton, Russell and Shepherd. Sub-Lieut. Price (new pupil) rolling with Instructor Shepherd. Mr. Easter solo straights and half circuits. Sub-Lieut. Giles solo straights. Sub-Lieut. Allen practice landings, and Sub-Lieut. Riggall solo circuits, eights, &c.

Friday, Sub-Lieuts. England, Ffield, Groves and Hart and Messrs. Greenwood and Stalker straights with Instructors Manton, Russell and Shepherd. Sub-Lieut. Allen landing practice. Sub-Lieut. Price rolling with Instructor Russell. Messrs. Carabajal and Easter solo circuits. Sub-Lieut. Giles solo straights. Sub-Lieut. Riggall solo circuits, eights, &c.

Beatty School.—Pupils being instructed by Mr. Geo. W. Beatty on "dual" controlled biplanes last week:—

Monday, Messrs. MacLachlan, Gardner, Aoyang, Parker, Whitehead, Jenkinson, Monfea, and Anstey Chave.

Tuesday, Messrs. MacLachlan, Gardner, Aoyang, Beard, Beynon, Newberry, Monfea, Le Vey, Anstey Chave, Arbon and Dr. Christie.

Wednesday, Messrs. MacLachlan, Leong, Gardner, Parker, Whitehead, Jenkinson, Fletcher, Leeston-Smith, Beard, Beynon, Moore, Newberry, Bond, Le Vey, Anstey Chave, Arbon, Christie and Donald.

Thursday, Messrs. Leong, Gardner, Aoyang, Parker, Whitehead, Fletcher, Leeston-Smith, Beynon and Donald.

Friday, Messrs. MacLachlan, Moore, Monfea, Le Vey, Anstey Chave, Arbon, Christie and Donald.

Saturday, Messrs. Aoyang, Virgilio and Gardner.

Sunday, Messrs. Aoyang, Parker and Whitehead.

On Thursday, Mr. Rupert Forbes Bentley finished his test and made a very good *vol plané*.

Friday morning, Mr. MacLachlan flew for his certificate, which he obtained in very good style, making very fine banks during his figures of eight. In the evening

Mr. Andrew Y. K. R. Cheung, a native of China, who has recently secured his pilot's certificate at the Beatty School, Hendon.

Mr. W. Roche-Kelly (the new school pilot) took out the 40 h.p. Wright, and made some test flights previous to beginning his duties as instructor.

British Caudron School.—On Monday, last week, the Caudron school was out at 7.30 a.m. Instructors during week: R. D. Desoutter, R. M. Murray and E. Prosser. R. Desoutter test flight, followed by Dr. Christie doing straights and Mr. Gunner rolling well and making good progress.

Wednesday morning, at 6 a.m., Messrs. Christie and Ivermee doing straights at a good height. Mr. Abbott flight on "45." Evening, school out again at 4.30 p.m.

Messrs. Moon, Ivermee and Christie doing straights. Mr. Legh circuits on "45." Messrs. Gunner, Barfield, Stevens and Beynon rolling. Passenger flights on "60" to Messrs. Beynon, Ivermee, Harris and Gunner by R. Desoutter. Mr. Abbott finished last test for his *brevet* on "45," reaching to a height of 1,100 ft.

Thursday, early morning misty. At 8.30 a.m. Messrs. Moon, Christie, Barfield and Ivermee doing straights.

Mr. Claude Strickland, I.C.S., who last week secured his *brevet* at the Grahame-White School, Hendon.

Messrs. Stevens and Beynon rolling. Evening school out at 4 p.m. Messrs. Moon, Christie and Ivermee half circuits. Mr. Barfield doing straights, Messrs. Beynon and Gunner rolling. Passenger flights to Lieut. Tench and Lieut. Bird (two new pupils). Mr. Legh passed all tests for his *brevet* in very good style, making well banked turns, and reaching to a height of 1,200 ft. in figures of eight. Friday, school at 7 a.m. Mr. Moon circuits and figures of eight. Messrs. Christie and Ivermee half circuits. Mr. Barfield straights. Messrs. Beynon, Tench and Bird rolling. Evening school out at 5 p.m. Lieut. Tench rolling. Mr. Stevens rolling, straights. Messrs. Christie and Ivermee half circuits. Flight Sub-Lieut. Moon passed first two tests for his *brevet* in good style on "45." Saturday evening, R. M. Murray test flight. Lieut. Bird rolling, Mr. Stevens straights.

Sunday morning, R. M. Murray test flight. Lieuts. Bird and Tench rolling. Mr. Beynon rolling. Messrs. Barfield and Stevens straights. Evening, R. M. Murray test flight. Lieuts. Bird and Tench rolling. Mr. Burke rolling. Messrs. Stevens and Barfield straights.

Saturday evening, Lieut. Moon completed his tests for his *brevet*, passing same in good style.

Hall School.—Monday, last week, J. Rose six straight flights at 7 ft. high, improving.

Tuesday, very windy. New school tractor biplane completed and engine tested.

Wednesday, morning dense fog. In afternoon E. Brynildsen four straight flights at 20 ft., landing in usual good style. J. Rose four straight flights.

Thursday, E. Brynildsen and J. Rose four straight flights at 30 ft., the former showing considerable improvement.

Friday, J. L. Hall two circuits on *brevet* machine. E. Brynildsen five straights and half circuits in correct style. J. Rose three good straight flights.

Saturday, J. L. Hall four circuits on *brevet* machine. J. Rose three straight flights, improving somewhat in landing. E. Brynildson three straights and half circuits, now ready for circuits and figure eights. School now commencing work on new school pusher scout for pupils and extra practice.

Sunday evening, E. Brynildsen four straights, four half circuits.

Instructor of the week: J. L. Hall.

London and Provincial Aviation Co.—Wednesday, last week, out at 6.30 a.m. Test flight, M. G. Smiles, 10 mins. Mr. J. H. Moore rolling 15 mins., making good progress. Mr. England Derwin two straights, then rising to 20 ft., finished nose on; machine wrecked.

Thursday, Friday and Saturday, repairing No. 1.

Monday last, W. T. Warren test flight on No. 1 machine, none the worse for accident. Messrs. Moore, Parker, England Derwin and Abel all rolling and making good progress.

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A "Missing" Flyer.

IN the casualties in the British Expeditionary Force reported from General Headquarters under dates of October 7th and October 9th the name of Capt. R. A. Boger, of the Royal Engineers and Royal Flying Corps, is included as "missing."

More Honours for the R.F.C.

ACCORDING to a letter which he has written home Capt. L. Dawes is another officer of the Royal Flying Corps who has been decorated with the Legion of Honour.

It appears from a letter written by Mrs. Street that the non-commissioned officer in the Royal Flying Corps who was mentioned recently as having been given the Cross of the Legion of Honour is Sergt. E. J. Street.

Comforts for Our Flying Services.

FROM Mrs. Sueter, wife of Capt. Murray Sueter, C.B., R.N., Director of the Air Department at the Admiralty, we have received an appeal for comforts for men of the Royal Naval Air Service who are serving abroad. It is an appeal which we are certain will find an adequate and ready response from our readers. Mrs. Sueter asks for the following articles: Comforters, long stockings (dark blue preferred), cardigans, grey flannel shirts, woollen drawers, and mittens. Parcels should be sent to Mrs. Sueter, "The Howe," Watlington, Oxon.

At the same time, Lady Henderson, wife of the General Officer Commanding the Royal Flying Corps, Expeditionary Force, is arranging to forward gifts and comforts for the cold weather to the men of the Royal Flying Corps (Military Wing) in the field. Warm caps, gloves, knitted jackets, wristlets, socks, pipes, tobacco, and cigarettes are most required. Any gifts of this kind will be forwarded if sent addressed to Lady Henderson, 8, Chesterfield Gardens, W. Parcels should be marked "Royal Flying Corps Aid." The Committee will also be grateful for cheques to be spent on such comforts. All letters should be addressed to Mrs. William L. Sclater, Hon. Secretary, Royal Flying Corps Aid Committee, 10, Sloane Court, S.W. The Treasurer is the Hon. Mrs. Edward Stonor, 27, Montagu Square, W.

FLIGHT

AIRCRAFT "MADE IN GERMANY"

WHICH MAY BE EMPLOYED AGAINST THE ALLIES.

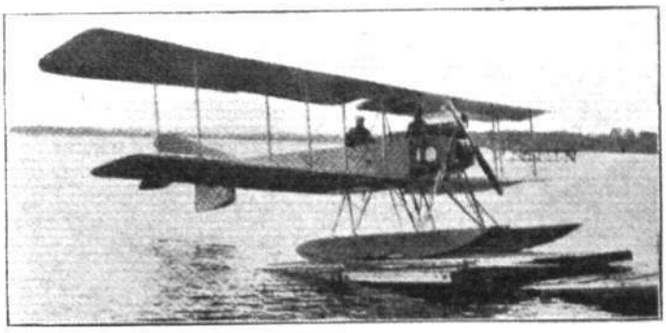
(*Concluded from page* 1021).

10. The Euler Triplane

is, we believe, the only successful hydro-triplane ever constructed. From the accompanying illustrations it will be seen that the three main planes have an increasing span, that of the bottom plane being 26 ft. 3 ins., that of the middle plane 33 ft., whilst the top plane spans 46 ft. The extensions of the top plane can be folded down, thereby reducing the overall span by about 13 ft. The staggering of the plane, as will be seen from the photographs, is very pronounced.

The 100 h.p. 9-cyl. Gnome engine is mounted immediately above the centre plane, and the lower plane, on account of the stagger, protects it effectively against water spray. Petrol is carried in a large tank placed down in the float or boat, and is forced from this main tank to a service tank near the engine by means of compressed air contained in a special air reservoir in the rear part of the boat.

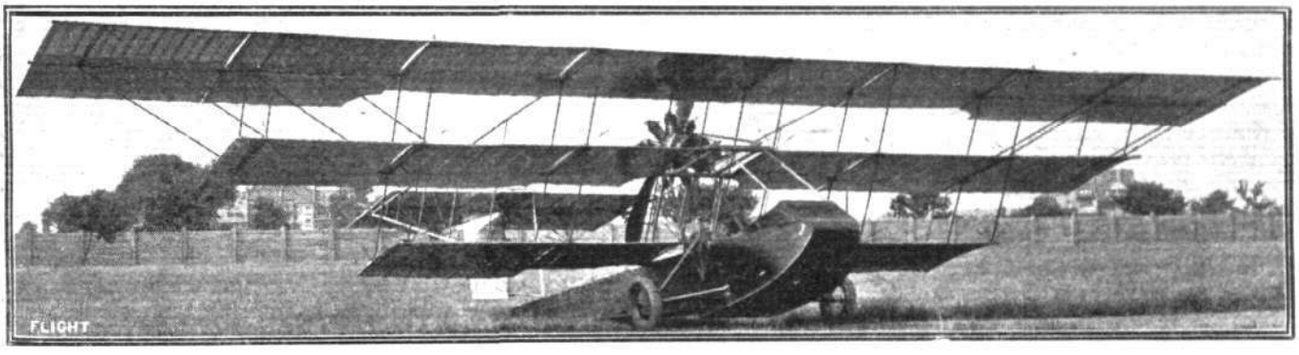
Carried on four tail booms attached to the rear spars of upper and lower main planes respectively are the tail planes, which consist of a fixed tail plane to which is hinged the elevator, and of a verticle rudder, supported on a framework coming up from the rear portion of the boat. The latter member, which is of the stepped type, is 23 ft. long and 3 ft. 4 ins. wide. The seats are arranged in tandem, the pilot sitting in front. In addition to the boat a land carriage is fitted, by means of which the machine can be started off land. For use over water the wheels may be raised above the boat, and can be lowered again from the pilot's seat should it be desired to alight on the shore. The landing wheels are sprung by means of rubber shock absorbers attached to the gunwales of the boat.

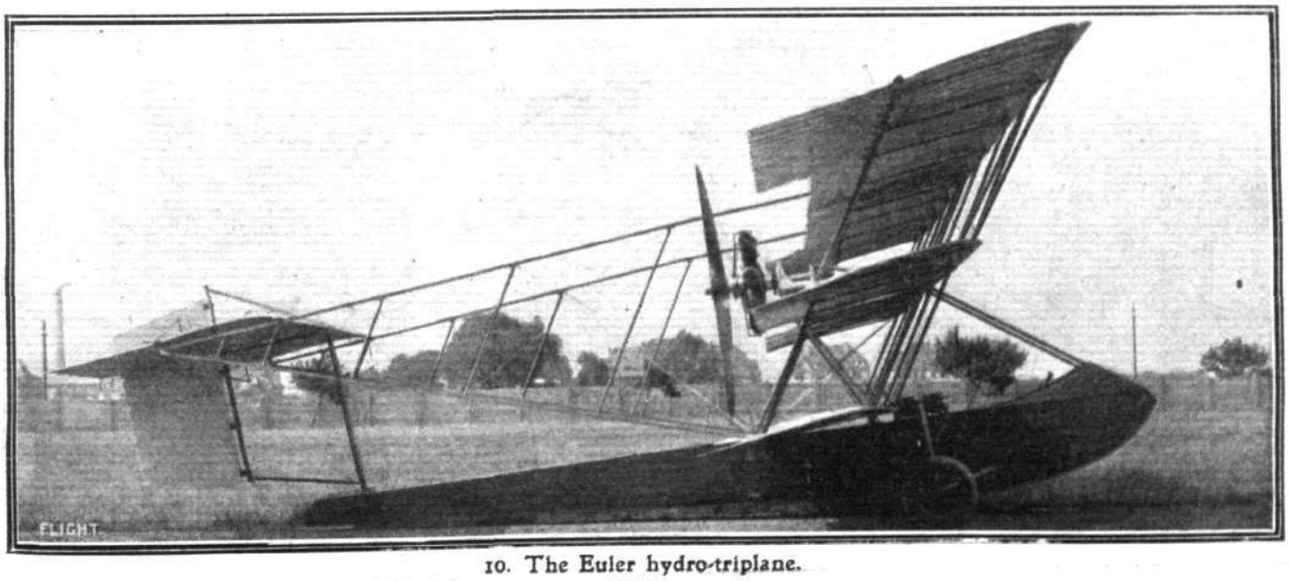


11. The F.F. Tractor seaplane.

11. The F.F. (Flugzeugbau Friedrichshafen) Seaplane

is a biplane of the tractor type, having a rectangular section body, and main planes which are straight as seen in plan but which are set at a dihedral angle. The engine—a 135 h.p. N.A.G.—is mounted in the nose of the body, and long exhaust pipes carry the exhaust gases down below the lower plane. Immediately behind the engine is the passenger's seat, whilst further back, to the rear of



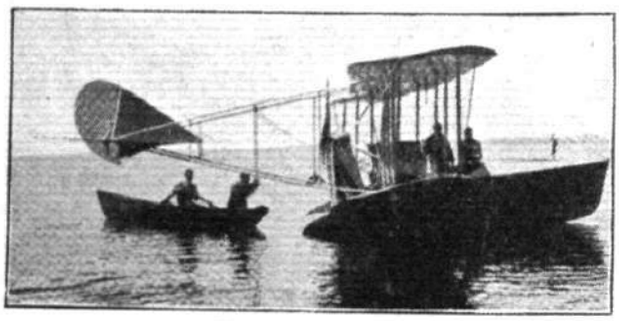


10. The Euler hydro-triplane.

the trailing edge of the planes, is situated the pilot's seat. The two main floats are of the single stepped type, and are spaced comparatively wide apart in order to increase the lateral stability of the machine on the water. In previous models a single central float was fitted. A small float fitted under the rear part of the body takes the weight of the tail planes when the machine is at rest.

12. The F.F. Flying Boat

is an experimental machine specially built for the Warnemunde-Scandinavia Race. The hull of this machine



12. The F.F. Flying Boat.

takes the form of a short deep boat, which only extends back a short distance behind the trailing edge of the lower plane. The engine—a 150 h.p. Benz—is mounted in the rear portion of the hull, and drives through bevel gearing a four-bladed propeller, mounted approximately half way between the upper and lower main planes. Pilot's and passenger's seats are arranged side by side immediately in front of the leading edge of the lower plane, and a curved deck over the front portion of the boat forms a wind-screen for the occupants. As the boat does not extend sufficiently far back to carry the tail planes, these have been mounted on an outrigger consisting of four tail booms connected with struts and braced in the usual way by cross wiring. Ample water clearance is provided by setting the lower main plane at a pronounced dihedral angle, and as a precaution small floats are fitted to the lower wing tips.

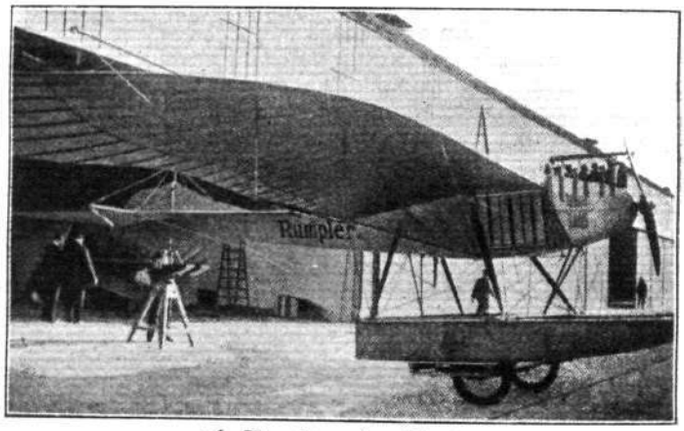
13. The F.F. Seaplane

is an earlier type, and is, as the illustration shows, of the propeller or "pusher" type. Its main planes are of rectangular plan form, and the top plane has a considerable overhang, the weight of which is taken when the machine is at rest by steel tubes sloping down to the lower ends of the outer pair of interplane struts. The 135 h.p. engine

13. The F.F. seaplane.

is mounted in the rear of the *nacelle*, and in front of it, arranged tandem fashion, are the two seats. A wide central float of the single stepped type is fitted, and two small cylindrical floats are fitted to the tips of the lower main plane. The two wheels may be raised or lowered at will from the pilot's seat.

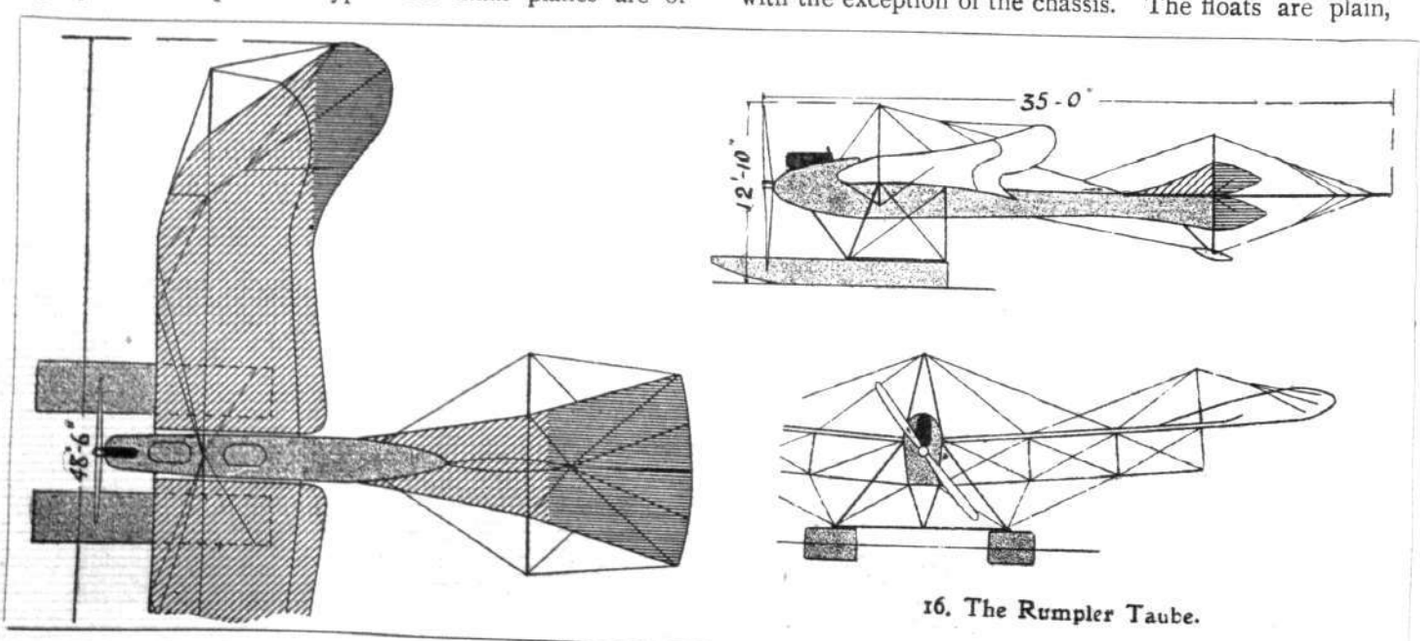
14 and 15.—Of the machines numbered 14, the **Fokker Biplane**, and 15, the **Gotha Flying Boat**, no particulars beyond those printed in our table are available.



16. The Rumpler Taube.

16. The Rumpler Taube

is exactly similar to the Rumpler Taube land machines, with the exception of the chassis. The floats are plain,

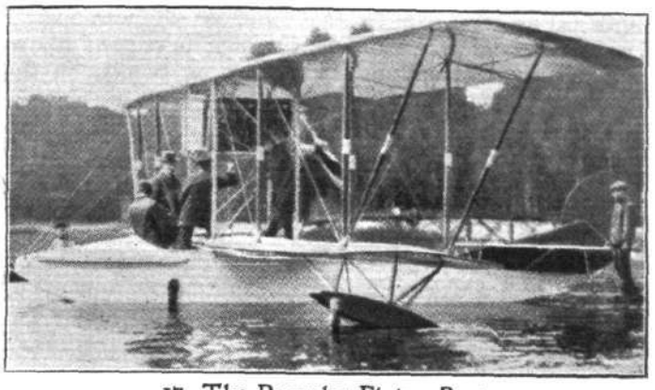


16. The Rumpler Taube.

non-stepped, and placed comparatively close together. They are built up of two layers of mahogany over a framework of ash, and are supported from the *fuselage* by stout streamline struts.

17. The Rumpler Flying Boat

does not differ materially in its genetal arrangement from the various well-known American flying boats. The hull or boat has a single step placed approximately under the



17. The Rumpler Flying Boat.

centre of gravity. The bottom of the boat behind the step has a concave curvature, gradually flattening out towards the stern. In front the boat is flat bottomed. Constructionally it is built up over a framework of ash covered with three-ply and six-ply wood on the sides and bottom respectively. The two seats, which are situated just in front of the leading edge of the lower main plane, are placed side by side, the pilot sitting on the right. Control is by means of rotatable hand-wheel, mounted on a vertical pivotted column, and a footpath for the rudder. The engine, a 150 h.p. 6-cylinder Benz, is mounted on a structure of steel tubes approximately half way between the two planes. It drives directly a propeller placed behind the main planes, of which the upper one has the trailing edge cut away in the centre to provide the necessary clearance. In front of the engine, and mounted on the engine bearers, is the radiator, whilst the petrol and oil tanks, which have a capacity sufficient for a flight of four and a half hours' duration, are placed down in the hull, whence the fuel is forced up to a small service tank near the engine by a pressure pump.

The upper main plane, which has a considerable overhang, the weight of which is taken by struts sloping outwards from the bases of the outer inter-plane struts, is built up in five sections in order to facilitate transport. The outer sections or extensions are hinged, and may be folded down, thus reducing the overall span of the machine to that of the lower plane. The inter-plane struts are of streamline section, and built up of two pieces of spruce hollowed out and glued and bound together.

The tail planes are built up of frameworks of steel tubing covered with fabric. They consist of a fixed horizontal tail plane, to which is hinged the divided elevator, and of a triangular vertical fin, to the trailing edge of which is hinged the balanced rudder. Two small wing-tip floats, supported on steel tube structures, provide the necessary lateral stability on the water.

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AIRCRAFT AND THE WAR.

SOME interesting information as to the difficulties experienced in reconnoitring were brought out in an interview given by a wounded British officer to a *Daily Telegraph* representative.

"On a recent occasion," he observed, a number of airmen were sent out on reconnoitring duty over the German lines, their main object being to discover whether the enemy was being reinforced. They were absent several hours, but reported on their return that there were no abnormal movements of the Germans, except that for some miles in their rear there was an enormous number of transports—miles of them—proceeding rapidly to the front. This incident was reported to headquarters, but was not deemed sufficiently complete, and immediately day broke on the following morning the airmen again rose and passed over the enemy's lines. They then found that reinforcements to the number of three army corps had arrived during the night, and were rapidly taking up their positions for attack.

"It was quite evident to the flying men that the miles of covered transport wagons which they had seen proceeding to the front on the preceding evening were packed with German soldiers. The important news was at once conveyed to the British and French commanders, and necessary measures were taken on our side to meet the new condition of affairs, with the result that the Germans were repulsed with heavy losses, no doubt to their intense surprise, as the points they attacked in such overwhelming numbers had not been strongly protected.

"An extraordinary case of a whole German army corps being lost by our aerial and land scouts occurred a few days ago. 'Two German army corps,' the officer continued, 'were observed by the British scouts to be marching to the woods at Vermand, and a sharp lookout was kept to observe the direction they took. Subsequently one corps was seen to reinforce the German troops at St. Quentin, and the other was completely lost sight of. It is supposed that the men concealed themselves in the forest at Vermand, where they could be observed neither by aircraft above nor by scouting parties on land. Probably the soldiers left the woods in small numbers at different times, and joined the main body at a previously-arranged rendezvous. Such an incident would, of course, greatly confuse their opponents. A similar disappearance of an army corps took place some time ago at the forest of Compiègne."

Writing to the *Daily Mail* from Paris on Tuesday week, Mr. George C. Curnock gave the following details of the wounding of a British pilot, whose name was not given:

"Vieil-Arcy, a village behind the British lines, between Soissons and Rheims, was the scene four days ago of one of those battles in the air between British and German aeroplanes which have been recorded more than once. If there is any moral to the story, it is that the aeroplane should always carry two men.

"In this case the British pilot was single-handed. Pluckily steering for an approaching aeroplane, he saw it duck while he rose. In this position he made haste to drop a bomb upon his enemy. He was a fraction of a second too late. The German observer was equipped with the deadly little pistol which all Taube flyers carry. As his pilot steered under the machine he turned and fired upwards, striking the British pilot with a bullet. Terribly wounded, the British airman still kept control of his machine. With grim courage he planed down, alighting close to his own ambulance. He still lives, but it will be a long time before he can take to the air again."

The *Daily Telegraph* correspondent at Bordeaux on the 7th, thus describes an exciting duel in the air which took place on the 5th inst. at Jonchery, near Rheims:—

"Here is a good story of an aviator's feat, for which the French War Office vouches. Sergeant Frantz and his mechanic Quenault, in an aeroplane mounted with a maxim, pursued a German aeroplane of the Aviatik pattern, which had flown over the French lines, attacked it broadside, exploded the oil-tank, and brought the machine down. Two Germans in the aeroplane were found, one burnt alive and the other previously shot dead by the maxim.

"All the French troops on the spot forgot the danger of passing shells, and jumped out of the trenches to watch the air fight. Sergeant Frantz, who already had the military medal (the French Victoria Cross), was awarded the Legion of Honour, and Quenault was given the military medal."

A message from Amsterdam stated that it was reported from Berlin that two German officers were killed on the 6th inst. at Jannowitz, in Posen, through the fall of their aeroplane.

According to the *Petit Journal*, a Taube aeroplane which was flying over Romilly-sur-Seine was brought down on the 5th inst.

On the 8th inst. news was received in Amsterdam that a hostile aeroplane had thrown a bomb upon the Zeppelin sheds at Cologne without causing any damage. The aeroplane was driven off by mitrailleuse fire. Another aeroplane flew over Düsseldorf and caused some damage by a bomb dropped on the Zeppelin sheds. The official announcement of the Admiralty regarding these attacks is given elsewhere, while in the *communiqué* issued by the German Great Headquarters on the 8th inst. there was the following :—

"The airship shed at Düsseldorf has been hit by a bomb thrown by a hostile aviator. The roof of the shed was pierced and the cover of an airship in the shed was demolished."

In this connection the *Daily Chronicle* correspondent at Amsterdam wrote :—

"Details have reached here of a thrilling story of a British airman's plucky exploit in dropping bombs over the Rhine airship shed. When the aviator appeared above the shed he was fired at by a number of Germans. He pretended to be hit, and began a sudden descent as if his machine were falling to the ground. When right over the shed he dropped a bomb, causing a terrific explosion in the building, and then he rose at great speed and escaped.

"Huge stores of cement have been found near Malines in houses which have been occupied by Germans. The cement must have been there for a long time in order that it might be available in the construction of foundations for German siege guns."

An official statement issued in Tokio on October 8th stated that the German fire at Tsing-tau was slackening. During the fighting the rope which held a German captive balloon was severed and the balloon floated away.

On the 8th inst. Paris was again visited by a Taube, the incident being thus described by the *Daily Telegraph* correspondent :—

"A Taube coming from the north dropped two bombs at nine o'clock this morning on the goods station of La Chapelle, where there was a troop train. One fell on a heap of coal, the other forty yards from the train. Neither did any damage.

"The same aeroplane dropped a third bomb at Aubervilliers, on the slope of the fortifications. Three persons were injured, one of them a little girl, whose arm was torn by a fragment of the bomb. The aeroplane then turned and made off towards the north-east without flying over the city. It had doubtless seen the approach of a French aeroplane."

Writing from Compiègne under date of October 6th, the *Morning Post* correspondent thus describes some of the work of the British pilots in that district :—

"For quite a time past Compiègne has been the scene of great aerial activity, and has had almost daily visitations of bomb-throwers. The damage done has been quite insignificant, although the principal objective has been the railway station. The German aeroplane bomb, so far as I have seen it, serves a double purpose. First, as a lethal explosive, and, secondly, as a fire-raiser. Fortunately they seem deficient in their latter quality, for usually one can find the little bag of incendiary powder intact, which theoretically should ignite with devastating results.

"There have been some lively little encounters in the air over all this district of late, in which the British aeroplanes have played a conspicuous part. I witnessed a duel which resulted in the destruction of one Taube machine, bent on mischief. The Englishman had him for speed, and, using his armament, smashed his motor after a short, sharp chase, catching him from above. During the recent movement of troops our aeroplanes have been especially busy keeping away the German scouts. It is a fair criticism to say that we have them all for speed. The German aeroplanes are very numerous and very useful. The French are very plucky, but a trifle slow, and in this respect fail to checkmate the speedier Germans. But the British machines are fastest of all, especially a type of small machine which occasionally appears whizzing across the sky at an amazing speed. The obvious orders to the British machines when flying over French territory is to keep low, so as to show their nationality, for many have been shot at by mistake."

Commenting on the German threats to send Zeppelin airships to attack London, the *New York Tribune* of the 8th inst. pointed out that in a fog perhaps the detection of Zeppelins would be all but impossible, but so too would be the chance of bombs doing serious damage. "Psychological damage is about all that the Zeppelins can hope to do in Great Britain."

Aircraft were prominent in the final attacks upon Antwerp. On the 8th a German aeroplane dropped a bomb on the railway station, and it was noticed that an aeroplane was directing the artillery fire. Several Belgian aeroplanes were also said to have been flying over the city. It was also reported that while the southern quarter was being bombarded a Zeppelin airship cruised above the fortifications and the city, dropping bombs on the Hoboken oil tanks, which caught fire. The tanks were at once emptied in order to prevent the conflagration from spreading.

A Taube also flew over Ghent and dropped a proclamation and a bomb at Schoenaerde, the latter only causing material damage.

A *Daily Telegraph* message from Rotterdam stated that a Zeppelin taking part in the bombardment of Antwerp had been shot down on the 9th inst., the event being visible from the frontier, but no confirmation of this is to hand.

Writing of the bombardment of Antwerp in the *Observer* last Sunday, Mr. George Lynch said :—

"The German gunners were firing rather aimlessly in a desultory manner until one of their Taube aeroplanes appeared on the scene, which kept circling over the Belgian lines at a considerable height and then returned to their own. Before long the result was apparent: a perfect tornado of shrapnel burst over the Belgian infantry lines."

A correspondent of the *Temps* reported on Saturday that—

"According to private news from Berlin, there has been constructed during the past few months a fleet of Zeppelins of a new model, larger and faster than those at present in existence. They are also more silent, and it is only when they are very near the ground that the motor can be heard. The idea is to employ them for raids above the North Sea and over England."

The *Daily Telegraph* correspondent at Ostend reported a visit by a Zeppelin on Friday :—

"It was just as well, perhaps, that they (some Belgians returning from England) could not see the Zeppelin, which was hovering over the harbour, intent, apparently, on another attack on the railway station, which was the objective on the recent visit. More watchful eyes were, however, on the look-out. The shot we heard was fired by a quick-firing British gun from behind the fort. It failed to hit the airship, which at once sailed off.

"Fortunately no bomb was dropped on this occasion by the Zeppelin. The nerves of the good people of Ostend have been quite sufficiently tried of late, and the present *va et vient* of the place does not tend particularly to local tranquillity."

Paris was again visited by hostile aeroplanes on Sunday, and the bombardment was thus described by Mr. G. H. Perris in the *Daily Chronicle* :—

"Two German aviators threw a rain of bombs upon Paris early this afternoon. It is officially stated 20 projectiles were thrown; and three persons were killed and 14 persons were injured, while Notre Dame only escaped ruin by the accident that a bomb striking the roof did not explode. So far as I can yet discover the others fell—one in the square behind the cathedral, one near the barracks of the Republican Guard in the Place de la Republique, one in the Rue du Rocher, near the Gare St. Lazare, one struck a coal depôt near the Nord Station, one fell near the Magazin Menagere in the Boulevard Bonne Nouvelle, one in the Rue Bourdaloue, near to the church of Notre Dame de Lorette, one in the populous Faubourg St. Antoine, and one in the Rue Lafayette.

"It was the last that killed three and injured 14 inoffensive civilians. Otherwise only materal damage was done. He was at a great height, but the aeroplane was visibly not of the usual light brown colour, and seemed to me to have been painted a cloudy grey, which helped to make it indistinguishable. It would seem that the German aviators were aiming at the railway stations."

In a later message Mr. Perris said :—

"Later inquiry at Notre Dame shows that three bombs were thrown here. One fell into the river, where it is divided from the cathedral only by the sacristy and a roadway. The second struck the roof of the north transept at the point where it meets the roof of the nave. The guardians of the church would not permit me to see the spot, but it would seem on later inquiry that the bombs did explode, for a large hole had been made in the parapet and roofing and a pinacle broken, while many bullets or fragments of shell are embedded in the surrounding material. It is by accident and not design that the damage to the venerable pile is not more serious. Several French aviators rose to pursue the raiders, with what result is not yet known."

It was officially stated later that four persons had been killed and twenty-one injured, most of the victims being women and children. One of the aviators threw down a bag of sand to which was attached a flag and a message: "We have taken Antwerp; your turn will come soon."

On Monday morning another German aeroplane dropped six bombs in Paris. According to Mr. G. Ward Price in the *Daily Mail* :—

"One fell through the roof of the Gare du Nord and exploded between two railway wagons without doing much damage. The others fell in the streets without causing any loss of life.

"Five French aeroplanes gave chase, and the Taube soon disappeared eastwards. Several new air squadrons are being organised at points round Paris to watch the city and prevent hostile aeroplanes approaching.

"It is now ascertained that the bombs dropped yesterday caused four deaths and wounded 34 persons. This afternoon a Blériot has patrolled constantly over Paris."

According to a telegram from Cettigne last week, an Austrian aeroplane, flying over the Montenegrin batteries near Mount Lovchen, was hit by a shell, and fell into the sea. The aviators were drowned.

A message from Pekin on Sunday stated that the bombardment of Tsing-tau during the last few days had been successful, and the aeroplane work has been excellent. Bombs dropped from aeroplanes damaged the source of the water supply and burned the principal barracks.

In connection with the capture of a German convoy by the French on the 9th, it is reported that it was due to a French aviator catching sight of it as the fog cleared off, and sending a report to the French commander at once.

On Tuesday two German aeroplanes passed over Paris, but were chased off by French aviators. They dropped some bombs, which, however, did no damage. A fog hung over the city all day.

A message from Copenhagen stated that on Monday hostile aeroplanes appeared over Carlsruhe, and after passing slowly over the ammunition factories and the barracks they escaped undamaged.

Mr. Salmet, who returned to France for active service, has had his right jaw fractured. He is, however, getting better, and is anxious to get to the front again.

In the *Daily Telegraph* on Thursday Mr. W. J. Massey gave the following account of the raid on the Zeppelin shed at Düsseldorf, as related by one of the officers who took part in it :—

"We left our base in Belgium on ——— scouts, small machines, well fitted for a job of this kind. We were away early in the morning. My machine went very well for a time, but suddenly the engine stopped, and I was forced to descend. When I was in the air I had no idea whether I was over Belgian or German territory. The blue and red lines on my map told me nothing, and for once I should have been glad if the frontiers had been marked in similar colours.

"However, I soon found that I was on Belgian soil, for a cheery Belgian woman ran up and asked if I had had my *déjeuner*. On examining my machine I found that the mechanic had been so anxious that I should get the greatest power out of the engine that he had put so much compression into the tank that the tank had burst. I was consequently unable to continue my second flight to Düsseldorf.

"Squadron-Commander Spencer Grey and Lieut. Marix proceeded on their journey, the successful accomplishment of which is entirely due to them. The statement in the French papers that Belgian aviators, with whom we have been cordially working in Antwerp, took part in the raid on the Zeppelin shed is inaccurate. When over Düsseldorf Grey and Marix were received by a heavy fire, notwithstanding which they came down low and dropped their bombs with splendid accuracy. Of the result there is no possible doubt. The shed was destroyed, with at least one Zeppelin inside it.

"Grey's machine was struck, but he was able to bring it back to Antwerp. It cannot be preserved as a momento of the raid, for during the siege the aerodrome was shelled and the plane was destroyed. Marix came in for much more attention from the German gunners and riflemen than Grey. His aeroplane was struck twenty times, and two of his control wires were cut, yet he managed, with great skill, to get over the frontier, and did not descend till he was within fifteen miles of Antwerp. He had to abandon the machine, but was himself picked up by a naval armoured motor car, and was brought back safely to the base, to be heartily congratulated by us all.

"The officer told with much pleasure how eight British and Belgian aviators—he was of the party—gave the German besieging army at Antwerp a rare fright. 'When the bombardment began we went up. Each of us carried two 20lb. bombs and a number of smaller ones. After we had gained a considerable altitude we sailed over the German lines and dropped our bombs on entrenched troops and siege gun emplacements. This disconcerted the enemy, who actually stopped the bombardment of the city to try and rid themselves of the presence of eight airmen! The big guns ceased to speak, and we drew all the fire. When all our bombs had been dropped we returned to Antwerp safely.'"

The *North German Gazette*, in discussing the matter, said :—

"The airman's undertaking was only successful to a very slight extent. The Düsseldorf shed, which was constructed in the year 1910 and belongs to the town, is one of the most modern airship sheds, and was protected as far as is possible against attacks from the air. In the construction of airship sheds it was naturally necessary to take bombardment into account. Measures of precaution therefore were taken which cannot be discussed, but which, as the present case shows, are nevertheless efficient enough to prevent the airships lying in the sheds from sustaining very serious damage. The airship which has just been damaged, and which had already gained some brilliant successes in the war, should be ready for active service again in a very short time."

In a *communique* issued by the French headquarters on Wednesday it was stated :—

"The losses of the German cavalry (round Lys) are certainly at least as great as ours. One of its divisions suffered particularly because it was pursued for a whole day by our airmen, who incessantly dropped bombs on it."

A message to the *Times* from Calais reported that on Monday a German airman flew over St. Omer and dropped several bombs on the town.

"Two men were killed, six people were injured, and considerable damage was done to property.

"Five aeroplanes started out in pursuit and surrounded the Taube. The German was wounded, his mechanic being killed by a shot through the forehead. The machine was plugged with shot."

According to news from Cettinge an Austrian hydro-aeroplane which had on several occasions thrown bombs over Antivari, having flown on Tuesday over Mount Lovchen, was struck in the right plane by a shot from a 65 millimetre gun and fell into the sea, where it was picked up by a torpedo boat, which came to the rescue from the Bocche di Cattaro.

A brief telegram from Petrograd on Wednesday stated that a Cossack patrol concealed in a wood near Warsaw has brought down a Zeppelin which was flying fairly low. The crew of the Zeppelin were unhurt, and the Zeppelin itself was taken intact to Warsaw.

Models

Edited by V. E. JOHNSON, M.A.

Mr. A. C. Abel's Single Surface Model.

THIS model, our correspondent informs us, was built (like many other models) on the instalment system.

"The wings," says Mr. Abel, "I had by me since December last. I finished the model about three months ago, and have had about forty flights with it, the longest being about 200 yards.

"It usually flies in circles, which, in my case, is an advantage, since the field I fly my models in is only 120 yards long by 60 yards broad.

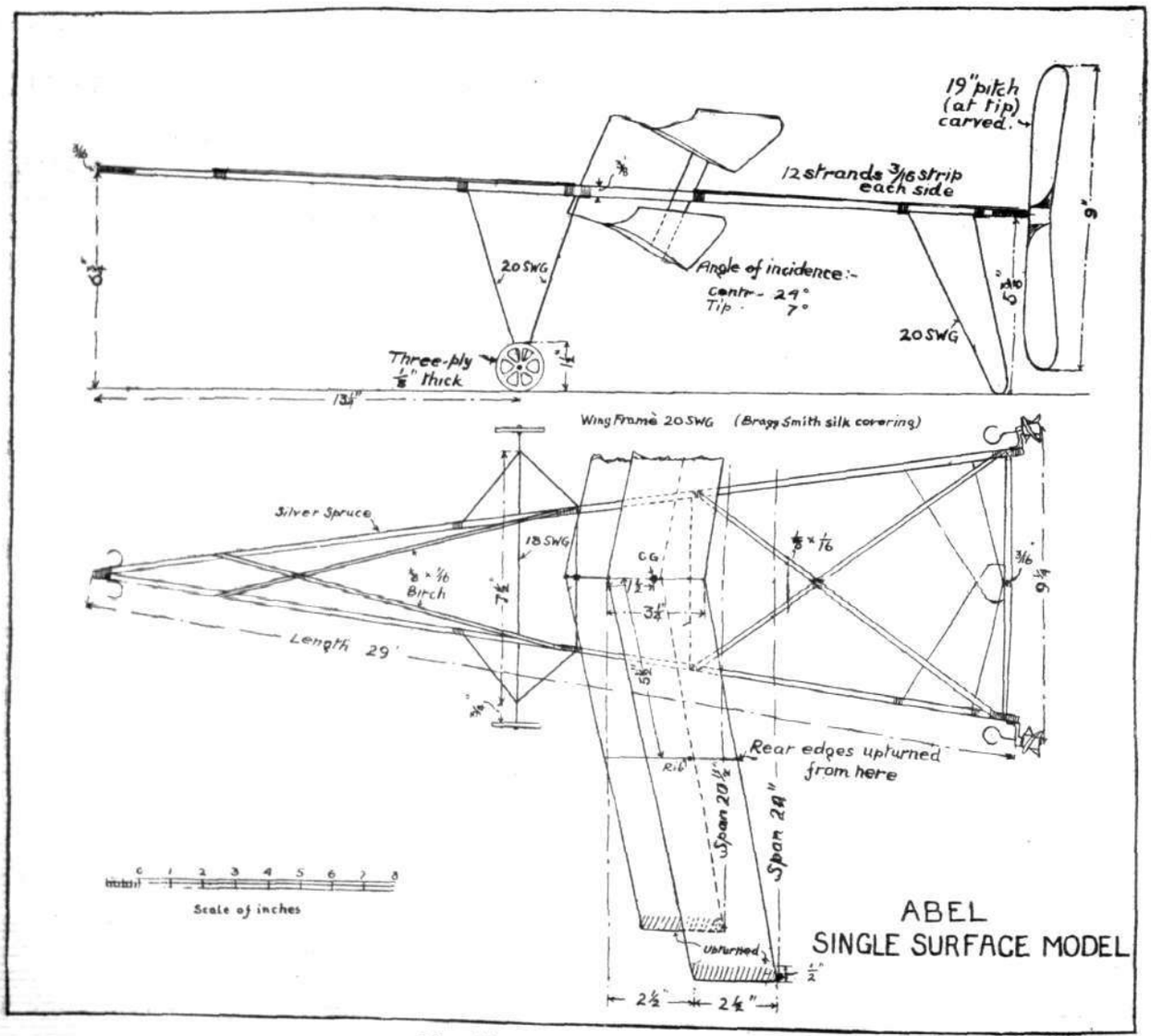
"It rises from a strip of tar felting 7 ft. 6 ins. long, without a push, against the wind, about twice out of every three attempts, and usually reaches a height of about 20 ft. The flights are very steady just after rising, and for the greater part of its flight, but when the propellers are just running down, *i.e.*, making their last few revolutions, the model rocks violently laterally and makes a steep dive, always landing, however, right way up. The only explanation I can offer with regard to this point is that at a certain speed (the critical speed) the model becomes laterally unstable. If this theory is correct, it would apply to longitudinal as well as lateral stability, and every machine, whether model or full-sized, would have their critical speed, though not necessarily in the speed range given them by their motors: *i.e.*, it might happen at a speed which no motor suitable to the machine could give it or at a lower speed than the speed of sustentation. The model is the fifth that I have constructed, the other four being monoplanes on conventional lines; it is also the first successful r.o.g. machine that I have constructed. This last fact I put down to its being a biplane and having about double the surface that my monoplane models had, whilst not being very much heavier.

"The two propellers are of the carved type, 9 ins. in diameter and of 12 in. pitch, driven by 12 strands of Clarke's $\frac{3}{16}$ in. strip rubber. The wheels are of three-ply wood, 3 ins. in diameter.

"The model rises from a strip of tar felt 9 ft. long, a slight push being necessary, as the felt is not quite long enough for the model to rise under its own power. No elevator or other kind of secondary stabilising plane is made use of in conjunction with the main planes, and no adjustment is provided other than bending the wings. I have obtained quite a dozen successful flights after having got the wings correctly set, mostly by means of gliding without further adjustment. A fin on the front might be an advantage, as all the side area is at present behind the centre of gravity."

First Annual Report of the Liverpool Aero Research Club, October 4th, 1913, to October 3rd, 1914.

"From the commencement of the Club's inauguration, it has been a very hard and uphill task to bring the membership up to anything approaching a number which should enable matters of importance to be attempted in the way of research work of any use—the real aim from the commencement.



The Abel single surface model.

"The various societies that had been formed with more or less success, and then faded away, had left the majority of aeronautical students in Liverpool and the District with a feeling that the possibility of any new club lasting out for any considerable time was very remote. This may be judged from the fact that despite numerous paragraphs, &c., in the *Liverpool Express*, graciously granted us in its columns, in addition to holding a model exhibition in May, the year closed with the total list of eleven members only. Keeping this total in view, members can at least find a little pleasure in noting that at the end of March, 1914, six months after the club's start, only six actual members were on the books, so that the membership nearly doubled during the next half-year. The outlook is, however, now brighter, and the greater interest that is being evinced in the subject in the district bodes better for next year's numbers, there already being several prospective members.

"Dealing with the work carried on during the year, out-door flying and experiments have alone been possible. No great durations have been attempted by members, the prevailing model being of the 1-1-0-2P type. Towards the latter part of the season, however, other types have been more in evidence, viz. :—single screw r.o.g. monoplane tractors, as well as r.o.g. models with covered-in *fuselages*, both biplanes and monoplanes, and twin r.o.g. models of the propeller-behind-the-tail-type, both monoplanes and biplanes. Waterplanes have received but little attention. Some propeller experiments have been carried out, mainly with a view to find suitable pitches, &c., for different wing surfaces. It is hoped that during the coming winter season the club members will be able to equip with some measure of success a model laboratory."

A balance-sheet is also enclosed with the above report, from which we note that the club is on the right side financially and has a small balance in hand. The subscription is 5*s.* annually, payable quarterly, and the club is greatly in need of members.

At the present time, when everything in Europe is generally more or less in the melting pot, aero model clubs, like everything else, are bound to feel its influence. The only thing to do is to keep all matters going to the best of our ability during the war, and hope for better things when it is over. One result of the war undoubtedly will be to give a great impetus to aeronautical matters both during its continuance and after it has finished. If model aero clubs act wisely and consistently they should reap a good benefit later on.

The writer has now been connected with model work generally (of which, after all, aeronautical models are only one branch) for a number of years, and he is more and more impressed by the sad fact that so many model workers should devote so much of their time to more or less what one can only term standardised models. As soon as a model becomes standardised nine-tenths of its real value is gone. We know what they will do under almost any circumstances.

There are plenty of mechanical problems—that of the ornithopter, for instance—which must be mechanically possible; Nature has solved it, in her way, to perfection: man so far, has not. We are, however, quite sure that if aeromodellists generally had really tackled this problem with one quarter the patience, the ingenuity and the enthusiasm that they have slogged away at the "flying stick," we should soon have a successful model and very possibly something more. A few competitions have, it is true, been held, and prizes really quite satisfactory from a compensatory point of view been offered, with so far the very poorest of results. Very possibly the conditions were wrong, being too stringent for a start, not from a qualifying duration point of view, but from the point of view of the flapping surface. To stop experimenting because these competitions have been, practically speaking, a fiasco would be a fatal error.

In experimenting with new model types it is, of course, the initial stages that are the most difficult, but they are also the most interesting and the most valuable, for everything that comes afterwards depends on them; they are the foundation-stones on which all later progress rests.

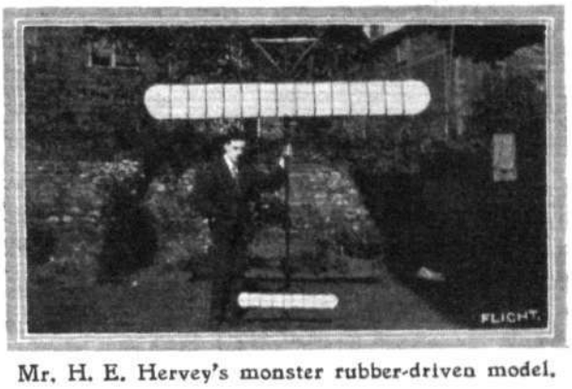
Mr. H. E. Hervey's Record-Breaking Model.

This model, like Krupp's 16·5 in. howitzers, is a record breaker surely in point of size: for a rubber-driven machine, that is. Our correspondent sends us the following interesting account of this model:—

"I enclose," says Mr. Hervey, "photo. and drawings of a model I have just constructed, which may be of interest to the readers of FLIGHT on account of its unusual size and weight.

"The main plane, which is double surfaced, has a span of 8 ft., and chord of 12 ins. The top surface has a camber of one inch, the lower of $\frac{1}{2}$ in., the deepest point of each being 4 ins. from the leading edge. The rounded tips of gauge 16 steel wire are sharply upturned to ensure lateral stability. The plane is covered with white Jap silk doped with cellon, and black ribbon is afterwards glued round the edges and over the ribs; this greatly adds to the appearance of the plane, besides strengthening it considerably.

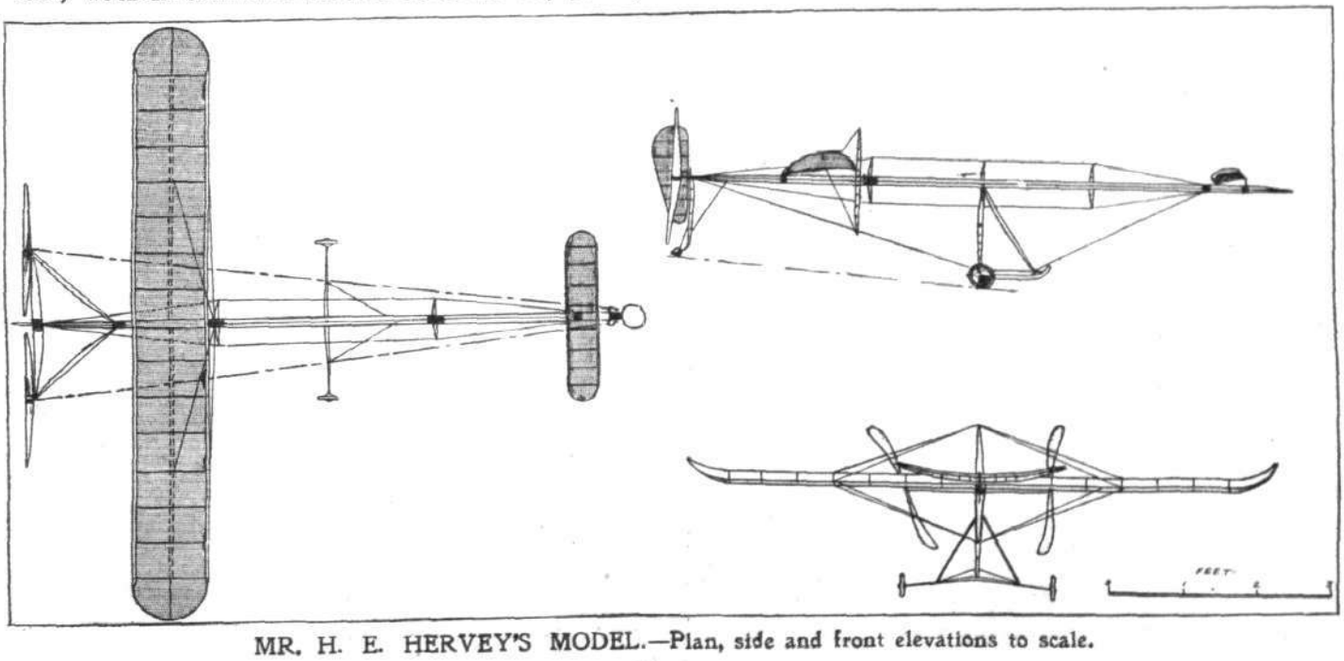
"The elevator, which is single surfaced, has a span and chord of



Mr. H. E. Hervey's monster rubber-driven model.

32 ins. and 5 ins. respectively; it is adjustable to any angle by means of a screw.

"The *fuselage* is 8 ft. 2 ins. long, and consists of a hollow spar, circular in cross section, being one inch diameter, tapering to $\frac{3}{4}$ inch in the front and $\frac{3}{8}$ inch at the back.



MR. H. E. HERVEY'S MODEL.—Plan, side and front elevations to scale.

"There are three king-posts to hold the bracing wires in position above and below the *fuselage*, and two for those at the side; these are made of U-section steel, into which streamliners of silver spruce are fitted.

"The landing chassis consists of four stanchions of white wood, forming two V's, somewhat resembling the Nieuport chassis. The two rear stanchions are attached to the back of the skid by two pieces of clock spring, the front ones being fixed in the same manner 10 ins. further along the skid. The axle, which is 24 ins. long, is made in the same manner as the king-posts, the leading edge being of U-section steel; it is fixed to the back of the skid by a T-shaped brass plate. Two small struts run from the centre of each of the rear stanchions to within 6 ins. of the end of the axle on each side.

"The rubber-tyred disc wheels have a diameter of 3 ins.

"The rudder is double-surfaced, and is 15 ins. long by 4 ins. wide at the widest point; it is made of steel wire, and is fixed between the two propellers. It is not shown in the photos., and, in fact, I have not used it yet when flying the machine.

"The propellers (carved) have a diameter of 22 ins. and a pitch of 28 ins.; each one is driven by 28 strands of ¼-in. strip rubber.

"The *cabanes* consist of two struts 1½ ins. apart at the centre and meeting at the top and bottom; from this eight wires run to the main plane, four above and four below. All the woodwork is given three coats of brown shellac and one of copal varnish, all joints, &c., being bound with black thread.

"The c.g. of the machine is situated 4 ins. in advance of the main plane.

"The total weight of the machine, including rubber, is 4 lbs. 7 ozs.

"The best duration to date is 47 secs., the machine covering about 230 yds. in this flight. The distance was not accurately measured. As I have only had the machine out three times I hope to improve the duration considerably when I have got it properly tuned up."

It is extremely interesting to note that a rubber-driven machine of this weight and size has succeeded in making so good a duration as 47 secs. It would be still more interesting to see what a single screw machine of the same size, &c., could accomplish, also what this present machine could do in the matter of weight-carrying. Mr. Hervey does not inform us of the number of turns given to the rubber motors, or of the kind of "winder" he uses, or the foot-pounds of energy given out in "charging" the motors.

KITE AND MODEL AEROPLANE ASSOCIATION.

Official Notices.

British Model Records.

Single screw, hand-launched	Duration ...	J. E. Louch	...	95 secs.
Twin screw, do.	Distance ...	R. Lucas ...	...	590 yards.
	Duration ...	G. Hayden	...	137 secs.
Single screw, rise off ground	Distance ...	W. E. Evans	...	290 yards.
	Duration ...	J. E. Louch	...	68 secs.
Twin screw, do.	Distance ...	L. H. Slatter	...	365 yards.
	Duration ...	J. E. Louch	...	2 mins. 49 secs.
Single-tractor screw, hand-launched	Distance ...	C. C. Dutton	...	266 yards.
	Duration ...	J. E. Louch	...	91 secs.
Do., off-ground	Distance ...	C. C. Dutton	...	190 yards.
	Duration ...	J. E. Louch	...	94 secs.
Single screw hydro., off-water	Duration ...	L. H. Slatter	...	35 secs.
Single-tractor, do., do. ...	Duration ...	C. C. Dutton	...	29 secs.
Twin screw, do., do. ...	Duration ...	S. C. Hersom	...	65 secs.
Engine driven off grass ...	Duration ...	D. Stanger	...	51 secs.

Farrow Shield.—The result of this competition is as follows: Leytonstone and District Aero Club wins the shield with a total of 932 seconds—the opposing aero model's team being disqualified through some of their machines being over-surfaced.

Any communications regarding models should be addressed to 46, Templesheen Road, East Sheen.

AFFILIATED MODEL CLUBS DIARY.

Club reports of chief work done will be published monthly for the future. Secretaries' reports, to be included, must reach the Editor on the last Monday in each month.

Leytonstone and District Ae.C. (14, LEYTONSTONE RD., STRATFORD)

OCT. 18TH, flying as usual, Wanstead Flats, 10 a.m., if wet meet at club-room. Oct. 25th, B Section competition, single-screw tractor, hand-launch.

Paddington and Districts (77, SWINDERBY ROAD, WEMBLEY).

OCT. 17TH, flying at Sudbury, 3 p.m. Oct. 21st, autumn general meeting. All members are requested to be present at 89, Herries Street, Queen's Park, at 8 p.m.

UNAFFILIATED CLUBS.

Finsbury Park and District (66, ELFORT ROAD, HIGHBURY, N.).

SATURDAY, Oct. 17th, waterplane meeting, Highgate Ponds, 3.30 p.m. till dusk.

Liverpool Aero Research Club (62, CEDAR GROVE, LIVERPOOL).

OCT. 17TH, 3 p.m. till dusk, at Sefton Park, all types. Aero Research Trophy Competition rules for third quarter:—1. This competition is open to members of the Liverpool Aero Research Club only, and will be awarded for: 2. Models of the canard biplane type capable of rising from the ground under their own power. 3. *Fuselage* or motor-rods must not be of the A-frame, single-stick or hollow-spar, and must be built up. 4. Propulsion may be of any form the competitor may select. 5. The official flying will be timed on Saturday, Nov. 21st or 28th. 6. Models will be required to rise from natural ground, artificial surface will not be provided. 7. Competitors may change, add to, or repair their motive power as often as it is found necessary. 8. Competitors must not assist their models by pushing or otherwise, in rising off, under the penalty of being disqualified. 9. The winner shall be the competitor who gains the highest average of points. 10. Points will be allowed one for each second duration. 11. If time permits three trials will be allowed. 12. These regulations will be added to or amended at the discretion of the judges. 13. Entries must be made not later than Nov. 7th.

S. Eastern Model Ae.C. (154, PECKHAM RYE, S.E.)

OCT. 18TH, Blackheath, 8.30 to 10 a.m.; Lee Aerodrome, 10.30 a.m. to 12.30 p.m.

AERONAUTICS IN NEW ZEALAND.—An interesting group of a few members of the Dunedin Aero Club. Left to right (standing): Messrs. C. Marr, O. Wood, H. Chitwin, S. Wood, C. Bennett, L. Wood, R. Hatton, B. Bennett, G. Hall, A. McCarthy (Sec.), L. Bell.

IMPORTS AND EXPORTS, 1913-1914.

AEROPLANES, airships, balloons, and parts thereof (not shown separately before 1910). For 1910 and 1911 figures, see FLIGHT, January 25th, 1912, and for 1912 and 1913, see FLIGHT for January 17th, 1914:—

	Imports.		Exports.		Re-Exportation.	
	1913.	1914.	1913.	1914.	1913.	1914.
	£	£	£	£	£	£
January ...	12,097	5,945	4,005	210	1,510	879
February	17,361	28,132	3,447	106	690	441
March ...	20,425	27,731	1,924	1,934	1,042	1,440
April ...	15,593	11,384	5,524	1,175	1,413	1,473
May ...	31,241	17,062	3,726	4,059	830	9,484
June ...	14,905	15,967	1,408	5,082	1,106	142
July ...	14,469	15,548	3,812	4,994	1,250	1,695
August ...	17,993	52,448	2,805	630	510	910
September	19,409	4,859	6,263	—	1,470	—
	183,493	179,076	32,914	18,190	9,821	16,464

Aeronautical Patents Published.

Applied for in 1913.

Published October 22nd, 1914.

22,916. A. E., H. L. AND H. O. SHORT. Floating dock for landing, launching and storing hydro-aeroplanes.

28,196. H. SHARP. Aeroplane having natural stability.

Applied for in 1914.

Published October 22nd, 1914.

9,997. T. SLOPER. Hydro-aeroplanes and floats therefor.

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